Fiscal and Market Impacts of Conservation Easements in Minnesota

by

Carl-Philipp Petri, Michael A. Kilgore, and Steven J. Taff[1]

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College of Food, Agricultural and Natural Resource Sciences
University of Minnesota
St. Paul, Minnesota

[1]Graduate Research Assistant, Natural Resources Science and Management program; Professor, Department of Forest Resources; and Associate Professor, Department of Applied Economics, University of Minnesota, respectively.

For more information about the Department of Forest Resources and its teaching, research, and outreach programs, contact the department at:

Department of Forest Resources
University of Minnesota
115 Green Hall
1530 Cleveland Avenue North
St. Paul, MN 55108-6112
Ph: 612.624.3400
Fax: 612.625.5212
Email: frweb@umn.edu

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A report to the:

Minnesota Board of Water and Soil Resources

Minnesota Department of Natural Resources

Carl-Philipp Petri, Michael A. Kilgore, and Steven J. Taff, [1]

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[1] Graduate Research Assistant, Natural Resources Science and Management program; Professor, Department of Forest Resources; and Associate Professor, Department of Applied Economics, University of Minnesota, respectively.

Executive Summary

In fall 2013, the Minnesota Board of Water and Soil Resources and Department of Natural Resources contracted with the University of Minnesota to conduct a study of the valuation policies and practices (for property tax purposes) of rural lands subject to certain permanent conservation easements. The study focuses exclusively on rural lands for which a permanent conservation easement was conveyed through the Reinvest in Minnesota (RIM) Reserve and its Conservation Reserve Enhancement Program (CREP) and Forest Legacy and Forests for the Future programs (Working Forest Conservation Easements [WFCE]) from 2008 to 2012. It does not address assessment policies applied to lands on which there is a short-term (usually 10 years) Conservation Reserve Program (CRP) contract or other types of easements (including other types of permanent conservation easements). The study contains the following components:

1. A compilation and analysis of county assessor policies for valuing several rural land uses (e.g., tillable, wooded) and land subject to a permanent conservation easement for property tax purposes.
2. An analysis of county assessor valuation practices for land enrolled in the RIM/CREP and WFCE programs and comparable lands not encumbered by a permanent conservation easement in selected of agricultural and forested counties.
3. A statistical analysis of how RIM easements influenced the market price of properties encumbered by an permanent conservation easement, relative to the market price of comparable lands not encumbered by an easement using transactional evidence.

The following summarizes each of these three analyses.

Permanent Conservation Easement Valuation Policies

In late fall 2013, Minnesota county assessors were asked to provide information on their 2013 per acre values for five different land-use classifications (tillable, woods, pasture, waste, wetlands) and lands for which a permanent conservation easement has been recorded. Seventy-five county assessors provided 2013 land valuation schedules, 71 of which reported having a conservation easement valuation policy. The policies for valuing permanent conservation easement lands varied considerably among counties, as did the per acre values assigned. While the majority of responding counties reported establishing easement land values as a specific dollar value or range of values, some counties also valued permanent conservation easement land as a percent of the land's noneased value or on a case-by-case basis. Nine counties did not reduce the land's estimated market value after an easement was conveyed. Per acre easement EMVs in 2013 ranged from less than 10 to 100% of tillable land value, with easements valued at 11 to 25% of tillable land being the most common. In 2013, the countywide average EMV of permanent conservation easement lands ranged from $300 to $3,800 per acre. In general, easement valuation policies typically reduce the value of land subject to a RIM/CREP easement more than for land subject to a WFCE. Additionally, RIM/CREP land valuation policies are generally more defined than WFCE land, with the latter policies often specifying the valuation of eased forest land be done on a case-by-case basis.

Permanent Conservation Easement Valuation Practices

An analysis of the valuation practices by county assessors for land subject to a permanent conservation easement was undertaken using data from the Minnesota Department of Revenue and Minnesota Board of Water and Soil Resources. Separate analyses for WFCE and RIM/CREP easements were conducted, with separate parcel- and township-level summaries prepared. Most lands encumbered by WFCE were classified for property tax purposes as “rural” land, whereas “agricultural” and “agricultural/rural” property tax classifications were most commonly associated with RIM/CREP easements. WFCE cover almost exclusively the entire parcel. Coverage of a RIM/CREP easement as a percent of the total parcel area varies considerably, with 44% of all parcels covered by no more than 10% by a RIM/CREP easement. Our analysis of valuation practices found that RIM/CREP land generally receive greater discount than WFCE land after the easement is conveyed. Across all townships, the mean reduction in EMV per acre for WFCE and RIM/CREP easements is 6% and 24%, respectively. Geographic patterns of the eased-to-noneased land valuation ratio are not apparent across the state. Even within a county, the reduction in EMV per acre on eased land compared to land not encumbered by an easement varied, sometimes substantially.

Permanent Conservation Easement Market Analysis

Using 11 years of transactional evidence, regression analysis was conducted on a matched sample of 288 land sales (144 encumbered by a RIM/CREP permanent conservation easement, 144 unencumbered sales). The percent of a parcel encumbered by a RIM/CREP easement for our 144 eased property sales ranged from 0.9 to 100% and averaged 34%. The analysis found that eased properties are negatively and significantly associated with per-acre agricultural land sales price. On average, agricultural land with a permanent conservation easement (covering roughly one-third of the property) sold for 27% less per acre than did similar agricultural parcels without such an encumbrance. Applying a 95% confidence interval indicates the average sale price discount for agricultural land with a RIM/CREP easement ranges from 19 to 36%. The analysis also found the more productive the parcel, the larger is the discount for an eased parcel. The model estimates that agricultural land fully encumbered by an easement sells for a substantial discount when compared to unencumbered agricultural land sales.

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Chapter 1
Minnesota Rural Land Valuation Assessment Policies

Introduction

Minnesota law requires that all real property be valued at its market value, defined as the price a property would sell for under typical, normal, and competitive conditions. County assessors are required to establish real property market values, also known as estimated market value (EMV), by January 2 of each year. This valuation process is accomplished primarily through an analysis of recent sales of comparable properties. Based on the analysis of recent sales, county assessors annually develop real property valuation schedules for all major land uses, including several rural land uses associated with agricultural or forest land. These schedules provide the basis for assigning EMVs for all taxable property in the county for that year (MN Department of Revenue 2013).

To ensure an accurate assessment of each parcel's value, changes to an individual parcel that increase or decrease its market value are reflected in a change in the property's EMV. One such change to a parcel's EMV can occur when an easement is conveyed. An easement transfers one or more property rights to a third party, thereby imposing restrictions on the future uses of the property. In most cases, easements are perpetual, meaning the rights conveyed (e.g., land-use restrictions) are indefinite. On rural lands, permanent easements are often conveyed for conservation purposes. These permanent conservation easements (PCE) commonly prohibit certain land-use practices (e.g., agricultural crop production, development), require the maintenance of specific land conditions (e.g., wildlife habitat, forest cover), and/or restrict future land sale conditions (e.g., prohibit parcel subdivision). In theory, the value of land subject to a PCE should be adjusted to reflect the value of the rights transferred. In most cases, the rights ceded will reduce the land's market value by restricting land uses and/or land management practices (e.g., the right to develop the property).

This section of the report describes and analyzes Minnesota county assessor policies for valuing lands protected by a PCE. It does so by utilizing county assessor's annual rural land valuation schedules that describe the valuation policies for several rural land uses (e.g., tillable, wooded) as well as the valuation policies for land subject to a PCE. These schedules identify base or average values (sometimes a range of values) for most major rural land uses, as well as assessment policies for rural lands where a PCE has been conveyed. These schedules provide a framework for understanding the county-level policies for valuing land subject to a PCE and comparable unencumbered rural lands.

Data and Methods

The data used to conduct this research were county assessor rural land valuation schedules provided by county assessors to the Minnesota Department of Revenue (MnDOR). At the request of the University research team, MnDOR staff contacted the county assessors in late 2013 and asked that they provide information on their 2013 and 2014 land valuation schedules for, among others, the following rural land-use categories: "tillable" for agricultural use, "woods" for forest

use, “pasture” for noncrop agrarian use, “wetlands” for wetlands, and “waste” for all other undeveloped rural land uses. County assessors were also requested to provide their policy for valuing land subject to a PCE.

An example of the rural land valuation schedules provided by counties is illustrated in Table 1. Because many counties had not yet finalized their 2014 rural land valuation schedules at the time of the data request, 2013 values were used in this analysis. With the study’s focus on the valuation policies for both permanent agricultural (Reinvest In Minnesota [RIM] Reserve and its Conservation Reserve Enhancement Program [CREP]) and forest (Forest Legacy and Forest For the Future program - hereafter Working Forest Conservation Easements [WFCE]) easements, a similar distinction was needed (for comparison purposes) in the rural land valuation schedules. Hence, data was collected on EMVs for both agricultural and forest lands. The value of forest land is defined for purposes of this study as that associated with wooded land values (“woods”). Agriculturally related land values in the assessor valuation schedules typically consist of those associated with tillable land, pasture land, waste land, and wetlands.

Data Reporting Formats

The rural land valuation data provided by county assessors were reported in several formats. These formats included reporting a single value for a given land-use category (e.g., $1,000/acre for tillable land), a range of value for a given land-use category (e.g., $750-1,500/acre for tillable land), and a valuation multiplier for use with land productivity ratings such as the older Cropland Equivalent Rating (CER) or the currently University-supported measure known as the Crop Productivity Index or CPI (e.g., $64/acre for each productivity index point for tillable land). When a range of land values was provided (assumed to be a minimum and maximum value/acre for the land use in question), a midpoint value was calculated from this range and assumed to represent the county’s “average” value/acre for that land use. For example, if a county rural land valuation schedule reported $1,000 to $1,500/acre for tillable land, the midpoint value/acre for tillable land is $1,250/acre and assumed to represent the 2013 countywide average value for this land use. When a county reported its land valuation schedule as a CER multiplier, the county average CER was obtained from Minnesota Land Economics (www.landeconomics.umn.edu) and then multiplied by the productivity multiplier to generate an estimate of the average value for that land use.

In some instances, county assessors indicated that their reported value is a base rate, to be adjusted for one or more parcel-specific factors (e.g., drainage). In still other instances, no information was provided on whether the reported land values represented a county average or a base rate, in which case it was assumed the county was consistent in how it reported its rural land values as either averages or base rates. Although infrequent, a couple of counties reported land values as averages but indicated values for easement lands were base rates.

Additional Land Use Subcategories

Table 1 illustrates the format counties used to report their 2013-14 land valuation schedules. This study focused its analysis on EMVs policies for five land-use categories (e.g., tillable, woods, pasture, waste, wetlands) and land subject to a PCE. While most counties reported their land valuation schedules for these six categories, a few provided additional delineations of their valuation schedules based on land quality and/or geographic location. For example, St. Louis

County establishes land valuation schedules on the basis of land productivity quality and distinct land markets. Koochiching County indicated it establishes land value schedules according to site productivity, parcel size, and access. Because the guidelines given to county assessors for reporting their rural land valuation schedules were general, no conclusions can be made about how parcel-specific EMVs are assigned in those instances when a county did not provide information on additional EMV delineation policies for a given land use class or PCE land based on parcel-specific attributes.

Table 1. Example of a county land valuation schedule data provided.

Land-use category	2013 Rates	2014 Rates*	Notes
Tillable	7,315	NA	
Woods	none	none	
Pasture	800 – 1,250	1,000 - 1,500	
Waste	550 – 1,150	700 – 1,300	
Irrigated	none	none	
Gravel Pits	2,000 – 6,500	2,000 – 6,500	
Wetlands	500 – 650	500 - 650	
Permanent Conservation Easement Land	600 – 1,000	1,000	
Building Sites:	14,500 – 21,500	14,500 – 21,500	
Blacktop 1st acre building site	tillable value	tillable value	
Gravel 1st acre building site	tillable value	tillable value	
Additional building site, per acre	tillable value	tillable value	

* 2014 anticipated rates if available.

In a few instances, it was not possible to establish a numeric value from the land valuation schedule data provided (either a single or range of values/acre) for land subject to a PCE. This might be the case if the assessor indicated the valuation of eased land depended on the specific landowner rights conveyed in the easement or if the assessor indicated the value of eased land was a percent of the noneased value or stated a specific nonnumeric valuation policy was used (e.g. “did not reduce”) without providing information about which land use category(s) the policy applied to.

It is important to note that when comparing the valuation policy for land subject to a PCE to the valuation policies for five different land uses (i.e., tillable, woods, pasture, waste, wetlands), no attempt was made to determine the various land uses for which a county’s reported easement values applied. For example, if a county assessor reported it valued PCE land at $500/acre, it is not known which land-use classification(s) (e.g., tillable, woods, pasture, waste, wetlands) were used to classify a parcel prior to the conveyance of a PCE. In a few instances, counties either stated or implied that different easement values were used based on the use of the land that was protected (e.g., tillable, woods), suggesting the land-use classifications that were used prior to the easement conveyance. Other counties indicated they limited their easement valuation policy to a specific type of conservation easement (e.g. RIM, WRP). Also note that, unless otherwise stated, each county’s valuation schedule for the five different land-use classifications and PCE land was assumed to apply countywide.

Results

Rural land valuation schedules were provided by assessors from 75 counties. Figure 1 shows the location of counties providing rural land valuation schedules. Note several large, forested counties such as St. Louis, Itasca, Aitkin and Lake, provided rural land valuation data, as did most of the agricultural counties in the south and southwest of the state. Among the nonreporting counties are those located in the greater Twin Cities Metropolitan Area and a few in east central Minnesota.

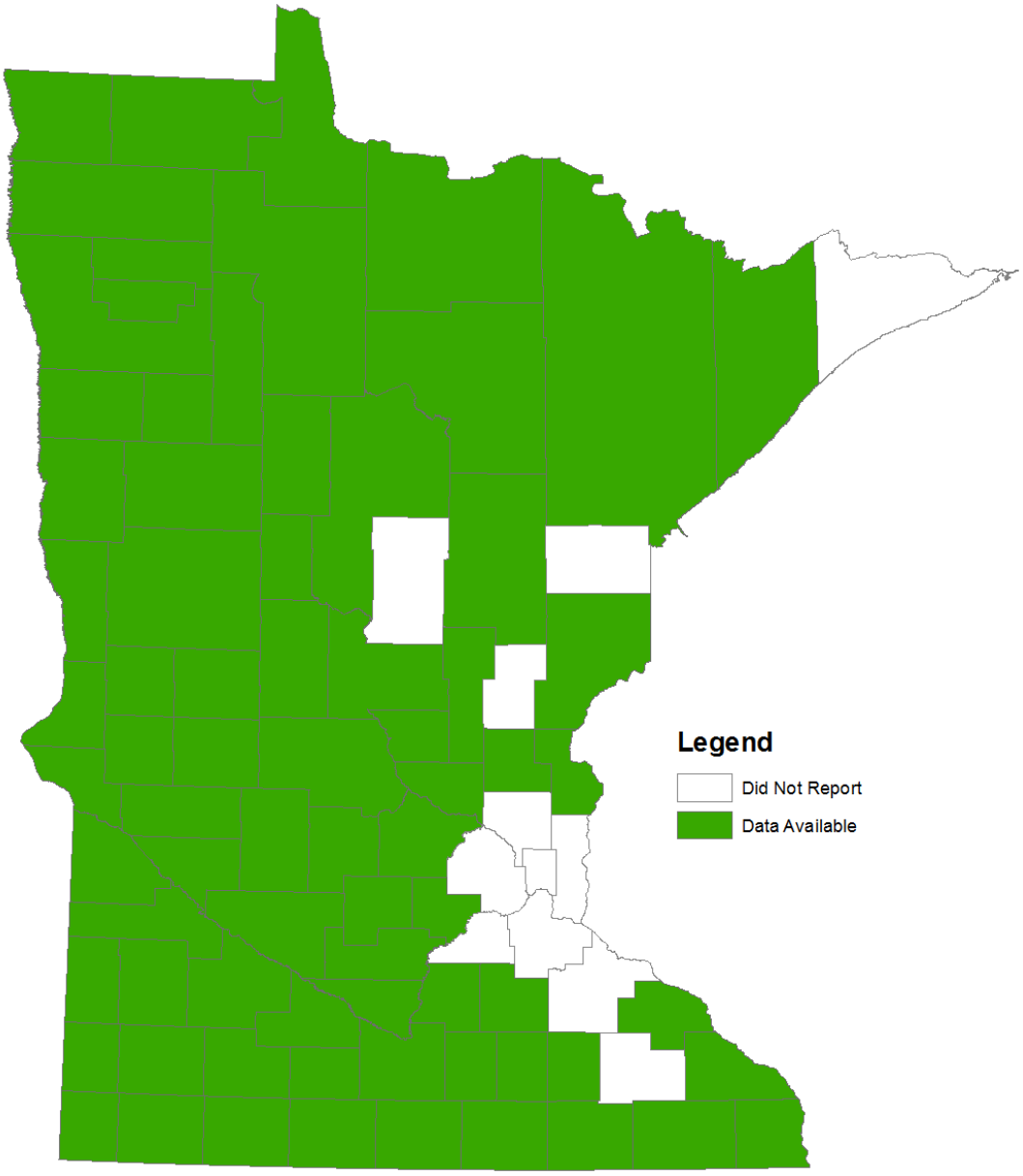


Figure 1. Map of counties providing 2013 rural land valuation schedules.

Table 2 describes how the 2013 land valuation data was reported for each of the five rural land use categories and PCE land. Tillable and waste lands are the only two land-use categories where data was received from all 75 reporting counties. Of the 75 counties providing 2013 rural land value schedules, the majority reported a single value for each land-use category and PCE land. Ranges (maximum and minimum values) were more commonly provided for tillable land, although they were reported in every land-use category. Specific to land subject to a PCE, 39 reported a single value, 17 reported using a range of values, and 15 reported using some other method for establishing EMV. Note that four reporting counties did not provide information on valuation policies for land subject to a PCE.

Table 2. Extent and types of 2013 rural land valuation data provided by the 75 responding counties: number of counties providing land value data for the land-use classification.[1]

	Tillable	**Woods**	**Pasture**	**Waste**	**Wetlands**	**Easement**
Single value	41	51	52	60	22	39
Range	32	17	19	13	7	17
No value indicated	0	5	2	0	44	4
Other	2	2	2	2	2	15
Responding	75	75	75	75	75	75
No data	12	12	12	12	12	12
TOTAL	**87**	**87**	**87**	**87**	**87**	**87**

[1] Not all reporting counties provided values for all land use categories.

Table 3 contains the 2013 rural land EMV data provided by assessors of the 75 responding counties. The information contained in this table represents the main source of data used in the analysis. In this table, midpoint values are used if the county reported a range of values for a given land use and/or PCE land (Appendix A contains the unedited 2013 county rural land valuation policies). "COMMENT" indicates the easement valuation policy was such that no single value could be determined by this report's authors. Note that land value policies for wetlands were only provided by a few counties. Also note that for two counties, numeric values per acre could not be estimated for any land-use classification based on the data provided. The county-specific valuation policy details are described in the footnotes.

The 2013 rural land valuation schedules reported in Table 3 vary considerably among counties and land-use categories. In 2013, the county "average" per acre EMV ranged from $10,600 to $700 for tillable, $5,700 to $300 for woods, $6,800 to $525 for pasture, $2,350 to $100 for waste, $1,850 to $100 for wetland, and $3,800 to $300 for PCE land. In general, land values were highest in the southern part of the state for four of the land-use categories (tillable, woods, pasture, waste). This pattern of decreasing per acre land values moving from south to north was less apparent for wetlands and land subject to a PCE.

Table 3. 2013 rural land and permanent conservation easement land valuation data provided by county assessors. Ranges were converted to midpoints. Original data is located in Appendix A.

County	Tillable	Woods	Pasture	Waste	Wetlands	Easement
Aitkin[1]	1,600	1,650	1,500	350	350	*COMMENT*
Anoka	*No Data*					
Becker[2]	1,985	1,350	950	350	400	*COMMENT*
Beltrami[3]	1,675	1,950	1,293	768	868	*COMMENT*
Benton[4]	2,650	1,000	1,000	300	300	*COMMENT*
Big Stone[5]	4,169	1,000	1,000	1,000	n/a	1,000
Blue Earth	7,920	2,500	1,000	1,000	n/a	1,000
Brown[6]	7,356	2,000	1,350	500	n/a	1,000
Carlton	*No Data*					
Carver	7,000	5,700	6,800	2,000	1,850	3,500
Cass[7]	1,650	1,950	1,600	625	625	*COMMENT*
Chippewa[8]	6,006	1,150	1,200	1,000	n/a	1,097
Chisago[9]	2,850	2,500	2,500	550	600	*COMMENT*
Clay[10]	4,600	975	975	975	n/a	500
Clearwater[11]	880	1,210	638	503	n/a	675
Cook	*No Data*					
Cottonwood	8,051	n/a	1,050	300	1,500	1,500
Crow Wing	*No Data*					
Dakota	*No Data*					
Dodge	9,300	2,790	2,790	1,860	n/a	n/a
Douglas	2,900	1,936	1,834	650	n/a	1,175
Faribault[12]	7,791	1,700	1,700	200	250	1,700
Fillmore	5,950	2,200	2,400	1,800	n/a	1,000
Freeborn	7,280	910	910	910	n/a	910
Goodhue	*No Data*					
Grant[13]	3,584	1,300	1,300	650	n/a	650

[1] Easement: "No reductions on acreage."
[2] "0.50 CER" Called 1/21/14: regardless of land type, easements were 50% off if no homestead 70% with homestead.
[3] PCEL: Does not reduce.
[4] Called 3/5/14: No reductions on easement.
[5] "CREP – RIM."
[6] Called 2/11/14: CER = 73.19 two townships rated at $95.95, 14 townships at $101; (14*$101 + 2*$95.95)*73.29/19 = $7,363/acre (mean value).
[7] "No acreage value reduction - some lakeshore per front foot rate reductions where warranted."
[8] "RIM – CREP."
[9] PCEL: "10% discount - 1 parcel (based on appraisal)"
[10] Easement: "RIM - WRP/WBA Perpetual – PBE."
[11] "800 – 1090 for low woods."
[12] Tillable: "99.88"; Called 1/21/14: 78 reported as multiplier; 78*99.88 =$7,791/acre (mean value).
[13] Tillable: "64 CER MULT"; Called 1/31/14: tillable: low CER 45 max CER 70, Avg. CER 56, Avg. $3,584/acre (mean value).

County	Tillable	Woods	Pasture	Waste	Wetlands	Easement
Hennepin	*No Data*					
Houston[14]	6,500	2,000	n/a	2,000	n/a	1,800
Hubbard[15]	1,563	1,475	1,350	550	n/a	*COMMENT*
Isanti	2,700	1,800	n/a	500	n/a	1,800
Itasca[16]	1,900	1,900	1,900	400	400	*COMMENT*
Jackson[17]	8,357	2,035	1,437	599	n/a	599
Kanabec	*No Data*					
Kandiyohi[18]	5,264	2,100	1,600	1,000	n/a	1,000
Kittson	1,770	575	575	425	425	575
Koochiching[19]	700	700	700	175	350	*COMMENT*
Lac Qui Parle[20]	4,867	1,125	1,000	750	n/a	1,300
Lake[21]	*COMMENT*					
Lake of the Woods[22]	700	713	525	313	n/a	700
Le Sueur[23]	6,800	3,700	3,200	1,600	n/a	1,000
Lincoln[24]	5,261	300	1,250	400	250	1,150
Lyon	7,315	n/a	1,025	850	575	800
Mahnomen	2,000	840	700	350	400	525
Marshall[25]	2,425	600	550	200	n/a	300
Martin[26]	6,825	1,400	1,050	1,150	n/a	1,200
McLeod[27]	5,600	2,500	1,800	625	n/a	1,200
Meeker	4,952	2,501	1,635	797	500	1,105
Mille Lacs[28]	2,100	1,600	1,600	400	400	*COMMENT*
Morrison	2,499	1,613	1,463	500	500	n/a
Mower	10,600	2,000	1,700	1,000	n/a	1,500
Murray[29]	6,788	650	650	300	n/a	825

[14] Pasture: “Built into CER”; Easement: “No Discount for CRP, RIM = 1800”; Called 1/13/14: Does not have a pasture land class; land is rated by CER.
[15] 2/18/14 via email: Hubbard does not reduce PCEL
[16] Called 1/13/14: Easement valuation depends on review of easement terms.
[17] Tillable: “119.71 100% CER factor.” $8,357/acre for tillable via email on 1/24/14.
[18] "CREP = TILLABLE VALUE - 26.67% PER YEAR UNTIL REACHING $1,000 PER ACRE" "RIM."
[19] Submitted valuation table as PDF-file; Land value ranges: $350-$700/acre.
[20] "CREP”
[21] Land value file did not provide general information. Called 1/13/14: Lower value of property. typically 25%, but 30-40% of eased land does not get reduced. Land type change only if easement prohibits certain uses.
[22] Tillable: “14 Ag Sales/70% ratio”, Wood: “18 RVL Sales 102% ratio.”
[23] Tillable: Value depends on CER; Stated average: $6,800/acre.
[24] RIM $900/acre; CREP $1,400/acre.
[25] Easement: "based on sales but very few."
[26] Tillable: Three categories: A1, B1, C1, Avg. = $6,825/acre.
[27] "RIM-CREP."
[28] Does not reduce
[29] “RIM: 650; CREP: 1000.”

County	Tillable	Woods	Pasture	Waste	Wetlands	Easement
Nicollet[30]	8,100	1,500	1,500	1,000	n/a	1,650
Nobles	8,256	5,070	1,393	270	135	400
Norman	2,734	700	700	300	500	500
Olmsted	*No Data*					
Ottertail[31]	2,700	1,550	1,300	500	500	*COMMENT*
Pennington[32]	1,208	800	800	200	n/a	*COMMENT*
Pine[33]	1,538	1,388	1,388	375	188	*COMMENT*
Pipestone	6,447	n/a	2,250	600	n/a	600
Polk[34]	2,537	900	900	250	900	500
Pope[35]	3,550	1,800	1,600	700	n/a	850
Ramsey	*No Data*					
Red Lake	1,171	900	650	300	n/a	300
Redwood	8,379	n/a	900	500	1,000	1,200
Renville	8,962	5,000	1,000	1,000	n/a	1,000
Rice[36]	6,200	3,200	3,000	1,500	n/a	1,500
Rock	9,098	n/a	1,895	1,000	n/a	900
Roseau[37]	933	655	540	400	400	n/a
Scott	*No Data*					
Sherburne[38]	3,800	3,600	3,600	500	500	3,600
Sibley	7,442	3,500	1,600	1,600	n/a	1,600
St. Louis[39]	*COMMENT*					
Stearns[40]	3,670	2,860	2,500	1,135	n/a	*COMMENT*
Steele[41]	6,552	2,000	3,445	1,050	n/a	1,125
Stevens[42]	4,655	800	800	800	n/a	800
Swift	5,175	1,350	1,350	800	n/a	800
Todd	2,150	1,700	1,350	500	500	1,300
Traverse	4,375	900	900	900	n/a	900
Wabasha[43]	6,750	2,600	2,600	1,300	n/a	*COMMENT*

[30] Easement: “Permanent $1650; Buffer Strip $4200; River $1000.”
[31] Easement: "We use 75% of the value of our Non Productive value not affected by permanent easement."
[32] "The permanent conservation lands will be valued at whatever it is (e.g. woods pasture etc.)."
[33] PCEL: Does not reduce.
[34] “WRP.”
[35] Easement: “Wet: 700, Dry: 1000.”
[36] “RIM.”
[37] Wood: "low brush land $515."
[38] Easement: "Acreage that is wooded/meadow/former pasture" Values for Tillable, Woods and Pasture are county averages; Waste: “Countywide”; Wetland: “Exempt.”
[39] Reduces easements between 50% and 90%. Have many different valuation schedules due to size of county.
[40] PCEL: “-40%”; “CREP, CREP2, WRP-RIM”
[41] CER based system: for tillable: "Per CER / max $8400 / avg. $6552"; Called 1/14/14: Did not reduce because all eased land was previously wasteland and "there is no lower category than wasteland."
[42] “CREP, CREP2, WRP-RIM”
[43] Easement: "same as previous to enrollment."

County	Tillable	Woods	Pasture	Waste	Wetlands	Easement
Wadena[44]	1,600	1,300	850	350	350	*COMMENT*
Waseca[45]	9,100	1,800	1,800	1,200	n/a	1,500
Washington	*No Data*					
Watonwan	7,938	700	700	100	n/a	700
Wilkin[46]	3,900	1,200	900	600	n/a	600
Winona	5,712	2,350	2,350	2,350	n/a	n/a
Wright	5,250	3,800	3,800	1,400	100	3,800
Yellow Medicine[47]	6,022	1,200	1,300	1,000	n/a	1,100
AVERAGE	**$4,775**	**$1,809**	**$1,537**	**$762**	**$538**	**$1,138**

[44] Easement: "25% reduction."
[45] Tillable: "100% CER"; Easement: $1200 "1800 Rim Woods."
[46] Tillable: "CER Multi 57 & 65" Called 2/3/14: 2013 Avg. CER 66, Avg. for tillable: $3,900/acre (mean value).
[47] Easement: "Crep-1400, all other-800."

Policies for Valuing Permanent Conservation Easement Lands

Of the 75 responding counties, 71 reported a policy for valuing land subject to a PCE (Table 4). A review of 2013 county land value schedules suggests four basic policies of valuation are reported. The first is a dollar value per acre in which either a single value/acre or range of values/acre. This is, by far, the most common valuation method employed, with 53 (75%) of counties using this policy. A second policy values PCE land as a percent of its noneased value (also as either a single value or range of values). Five counties reported using this policy. The third policy establishes the value of land subject to a PCE on a case-by-case basis according to the specific terms of the easement. Four counties make use of such a policy. Nine counties stated they did not change the EMV of a parcel after a PCE had been conveyed in 2013.

Table 4. 2013 county policies for valuing lands subject to a permanent conservation easement.

	Number of counties
Land Valuation Schedules provided	75
Schedules included information for valuing land subject to PCE	71
Easement valuation based on specific dollar value or range of values	53
Easement valuation based on % of noneased value	5
Easement valuation based on a case by case basis	4
No reduction in value after easement is conveyed	9
No easement valuation schedules provided	4
No rural land valuation schedules provided	12
TOTAL	**87**

Permanent Conservation Easement Land Values

Figure 2 illustrates the range of 2013 EMVs for land subject to a PCE in those counties for which a per acre value could be estimated. The majority of reporting counties (74%) valued PCE land between $500 and $1,500 per acre. Six counties valued PCE land at no more than $500 per acre in 2013, and eight counties valued them at more than $1,500 per acre.

Figure 2. Value per acre of land subject to a PCE among reporting counties. Data are based on 2013 average values reported or calculated midpoint values.

Easement Land EMV as a Percent of Noneasement Land EMV

Table 5 shows the per acre value of land subject to a PCE as a percent of the county's per acre value for tillable, woods, pasture, and waste lands and wetland. As expected, the EMV of PCE land as a percent of noneased rural land values is the lowest for tillable land among the five land-use categories examined. Forty counties (60% of the total counties reporting EMVs for both tillable and PCE land) valued PCE land at no more than 25% of their tillable land EMV per acre in 2013. In fact, the per acre value of PCE lands in five counties represented no more than 10% of the counties' average tillable value per acre. Six counties valued their PCE lands at between 51 to 75% of their tillable land value per acre, and thirteen valued PCE land between 76 to 100% of tillable EMV. Of these thirteen, ten valued eased and noneased the same, while three valued PCE land at 76 to 99% of tillable land EMV. No counties valued their PCE land more than their tillable land in 2013. By comparison, only 18 of 62 counties (29%) valued their PCE land at no more than 50% of their wooded land EMV in 2013. The 2013 per acre EMV of PCE land in four counties exceeded their wooded land EMV/acre. One-third of the counties (21 of the 65) valued their PCE land the same as their pasture land on a per acre basis. Still, the majority of the counties (55%) valued eased land less than pasture land. In making these comparisons, as previously noted, given the data at hand we could not determine which land use category(s) PCE land was assigned prior to the easement being conveyed.

Table 5. Permanent conservation easement land value as percent of the value for various land use categories (2013 county average value/acre comparisons). Table values indicate the number of counties where a county average value for **BOTH** the land use class **AND** permanent conservation easement land can be determined.

PCE land/noneased EMV	Tillable	Woods	Pasture	Waste	Wetland
0.1%-10%	5	1	0	0	0
11%-25%	35	1	0	0	0
26%-50%	8	16	11	1	1
51%-75%	6	13	17	6	3
76%-99%	3	8	8	4	1
100%	10	19	21	24	8
101%-150%	0	3	8	13	4
>150%	0	1	0	19	8
TOTAL	**67**	**62**	**65**	**67**	**25**

Comparison of PCE Land and Noneasement EMVs

Table 6 illustrates the per acre difference in EMV between various noneasement land-use categories and PCE land in 2013. As expected, these distributions follow a similar pattern as those examining PCE land as a percent of noneased land EMV presented in Table 5. The disparity between noneasement and PCE lands EMVs is greatest for tillable land. In 60% of the reporting counties, the EMV for tillable land exceeded the EMV for land subject to a PCE by more than $2,500 per acre in 2013. In contrast, only three counties reported valuing their wooded land at least $2,500 per acre more than the value of their PCE land. Across all counties providing 2013 wooded land EMV schedules, 63% reported valuing their wooded land more than their PCE land. The majority of reporting counties valued waste land and wetlands lower than PCE lands.

Table 6. Distribution of per acre EMV difference between noneased land and PCE land. Table values indicate the number of counties where a county average value for **BOTH** the land-use class **AND** permanent conservation easement land can be determined.

Noneasement land EMV less PCE land EMV (per acre)	Tillable	Woods	Pasture	Waste	Wetland
>$2,500	40	3	1	0	0
$750 - $2,500	12	14	9	1	0
$250 to $749	3	15	15	3	1
$1 to $249	2	7	11	7	4
$0	10	19	21	24	8
$-1 to $-249	0	3	5	11	4
$-250 to $-750	0	0	3	14	2
<$-750	0	1	0	7	6
Total	**67**	**62**	**65**	**67**	**25**

Table 7 presents a number of comparisons between the per acre 2013 EMVs for easement and noneasement rural land. The difference in EMV between PCE and tillable land ranged from no difference to as much as $9,100 per acre in 2013. Discounts for land subject to a PCE were as much as $4,670 per acre when compared to a county's wooded land EMV, $3,300 per acre compared to pasture land EMV, $800 per acre compared to waste land EMV, and $400 per acre compared to a county's wetland EMV. Some counties valued their PCE land as much as $3,100 and $3,700 per acre more than their waste land and wetlands, respectively. On average, the 2013 EMV for land protected by a PCE was 39% of tillable land EMV on a per acre basis among the reporting counties. This amounted to a difference between PCE and tillable land EMV of about

$3,500 per acre in 2013. For wooded, pasture, and waste lands, PCE land value averaged 79%, 82%, and 164% of the noneased EMV for these land uses, respectively. This amounted to a $589 and $365 per acre average discount for PCE land compared to woods and pasture EMVs, and an additional $257 per acre for PCE land, on average, compared to waste land EMV in 2013. Although few counties reported 2013 EMVs for wetlands, the PCE land EMV averaged more than three times the wetland EMV—an average difference of $492 per acre.

Table 7. Summary table of 2013 noneased land EMV minus PCE land EMV per acre. Comparisons are based on 2013 average values reported or calculated midpoint values.

Noneasement land and PCE land EMV comparisons (per acre)	**Tillable**	**Woods**	**Pasture**	**Waste**	**Wetland**
Min. EMV diff.: noneased less PCE land	$0	-$850	-$450	-$3,100	-$3,700
Max. EMV diff.: noneased less PCE land	$9,100	$4,670	$3,300	$800	$400
Avg. EMV % diff.: PCE/noneased land	39%	79%	82%	164%	332%
Avg. EMV: noneased less PCE land	$3,545	$589	$365	-$257	-$492

PCE Land and Rural Land Use EMV Comparisons

The following pages illustrate the relationship between the 2013 per acre EMV for land subject to a PCE and those for other rural land-use classifications commonly used by county assessors. These relationships are expressed as the PCE land EMV as a percent of noneased EMV for these various land-use categories. The included maps show the spatial patterns of these relationships across the state.

PCE Land and Tillable Land EMV Comparisons

Figure 3 illustrates the per acre relationship between the EMVs of PCE land and tillable land, expressed as a percent (2013 values). Figure 4 shows the spatial distribution of county PCE land policy as a percent of tillable land EMV policy in 2013. This map indicates the greatest difference between the value of PCE and tillable land is in the south and southwest of the state. PCE land in most of southern and western Minnesota is valued at no more than 25% of the county's tillable land EMV (per acre comparisons). Valuation policies for PCE land in much of the agricultural/forest transition acre of central Minnesota typically are between 26 to 100% of the tillable EMV policy. Note the four reporting counties in northeastern Minnesota establish the EMV for PCE land on a case-by-case basis. In these counties, PCE are generally not used as a tool to protect tillable land.

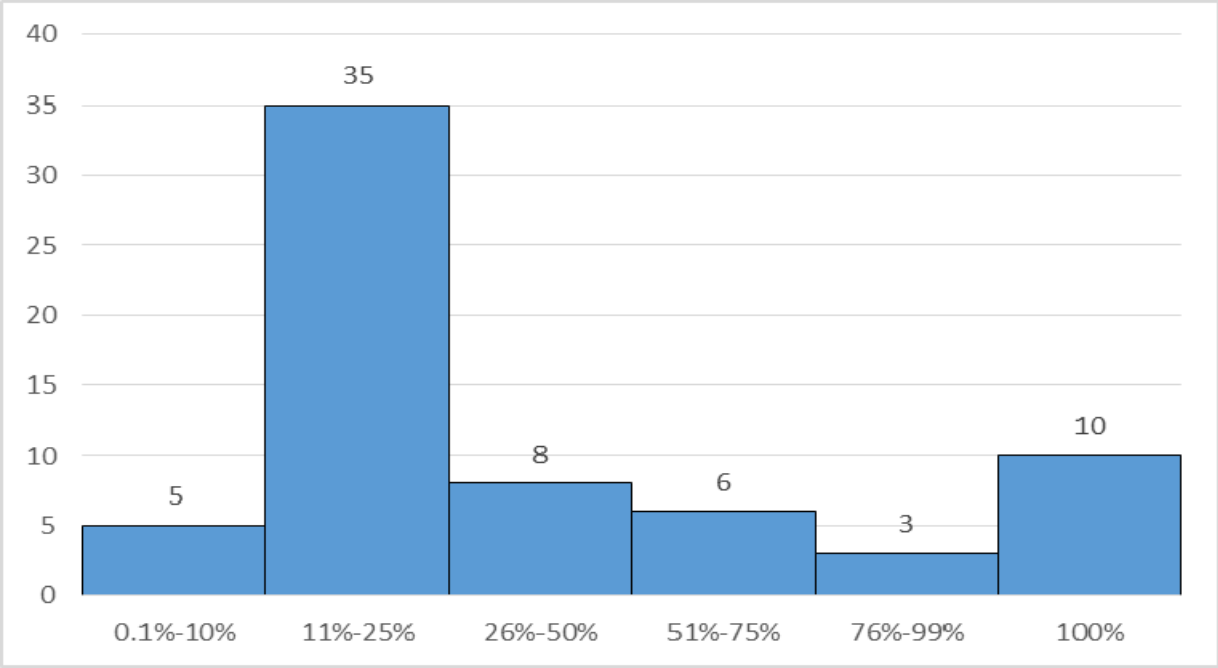


Figure 3. Easement valuation policies as a percent of tillable land values. Values are number of counties. Comparisons are based on the 2013 per acre average values reported or calculated midpoint values.

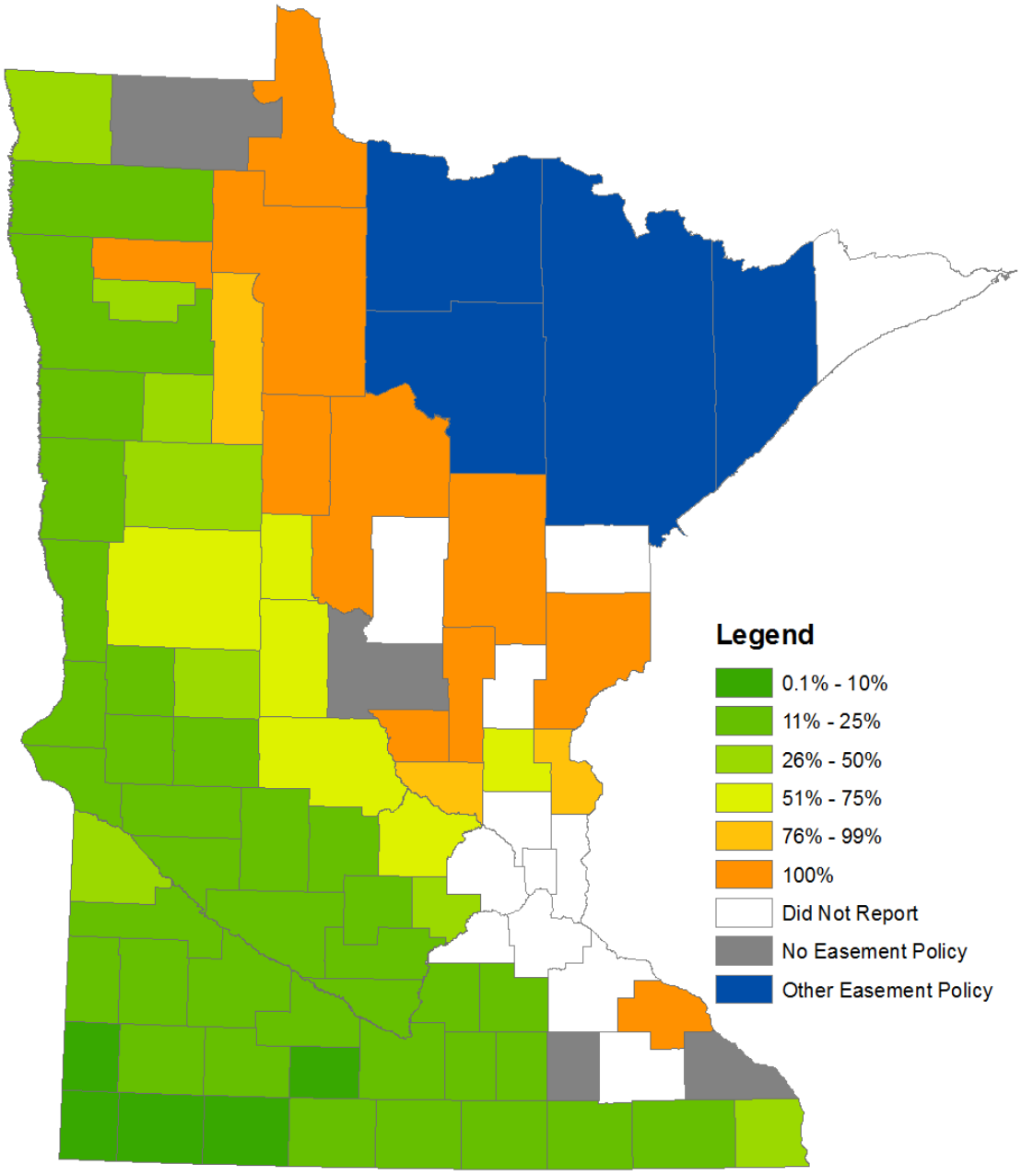


Figure 4. Map of the PCE land EMV as a percent of tillable land EMV. Comparisons are based on 2013 per acre average values reported or calculated midpoint values.

PCE Land and Wooded Land EMV Comparisons

Figure 5 shows the per acre relationship between 2013 PCE land EMV and wooded land EMV, expressed as a percent. Figure 6 shows the distribution of this relationship across Minnesota. Unlike those between PCE and tillable land EMVs, spatial patterns of the relationship between PCE and wooded land EMVs are much less distinct. For example, counties that value PCE land (per acre) at between 76 to 100% of their per acre wooded land EMV can be found in nearly all areas of the state, including counties bordering Canada and Iowa. Similarly, counties that value PCE land at between 26 to 75% of wooded land EMV can be found across much of Minnesota.

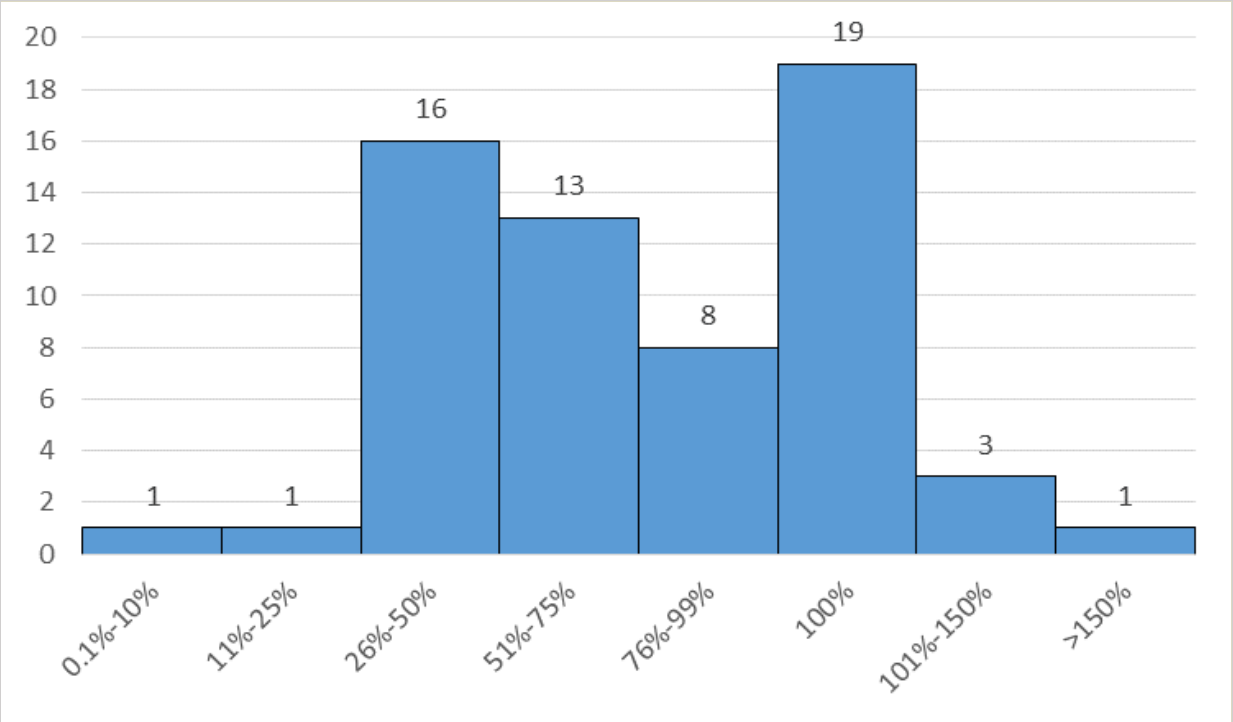


Figure 5. Easement valuation policies as a percent of wooded land values. Values are number of counties. Comparisons are based on the 2013 per acre average values reported or calculated midpoint values.

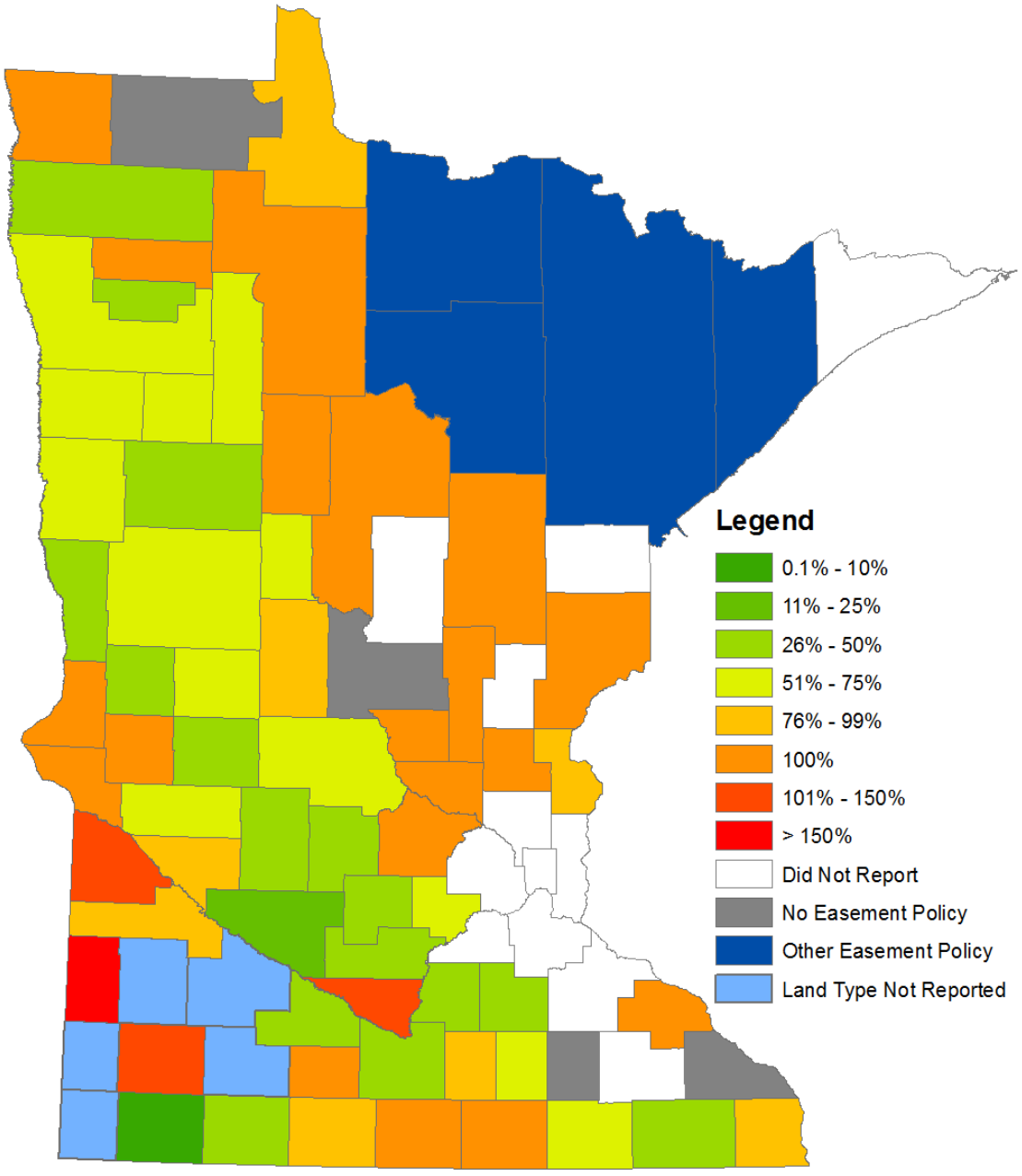


Figure 6. Map of the PCE land EMV as a percent of wooded land EMV. Comparisons are based on 2013 per acre average values reported or calculated midpoint values.

PCE Land and Pasture Land EMV Comparisons

Figure 7 indicates the distribution of the per acre EMV relationships between PCE and pasture land, expressed as a percent. Note the range of this relationship is less than the relationship between PCE land and wooded land. All reporting counties indicated their PCE land EMV in 2013 was from 26% and 150% of their pasture land EMV, expressed on a per acre basis. Figure 8 illustrates the distribution of the PCE pasture land EMV per acre relationship across Minnesota counties in 2013. Similar to wooded land, there are few apparent spatial patterns in the relationship between PCE and pasture land EMV per acre. For example, the eight counties that valued PCE land more than 100% of their pasture land EMV in 2013 are located in the southwestern as well as the northern part of the state. Yet, adjacent to many of these counties are ones that valued their PCE land at less than half the EMV for pasture land.

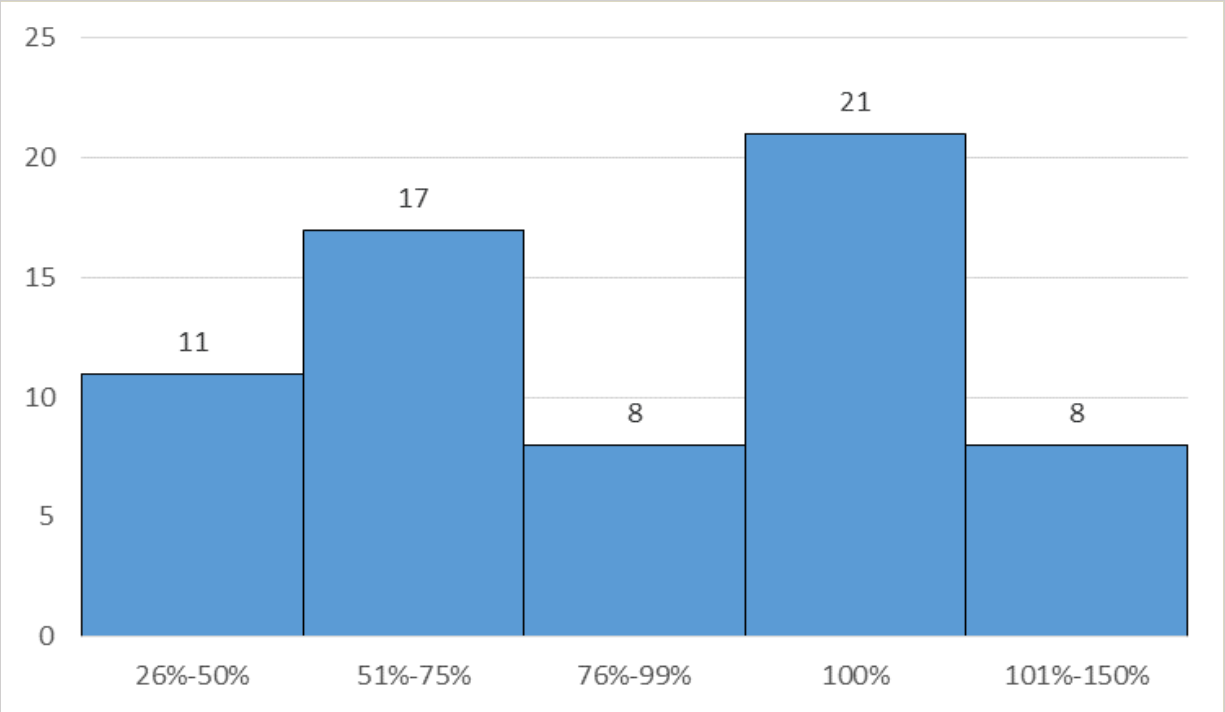


Figure 7. Easement valuation policies as a percent of pasture land values. Values are number of counties. Comparisons are based on the 2013 per acre average values reported or calculated midpoint values.

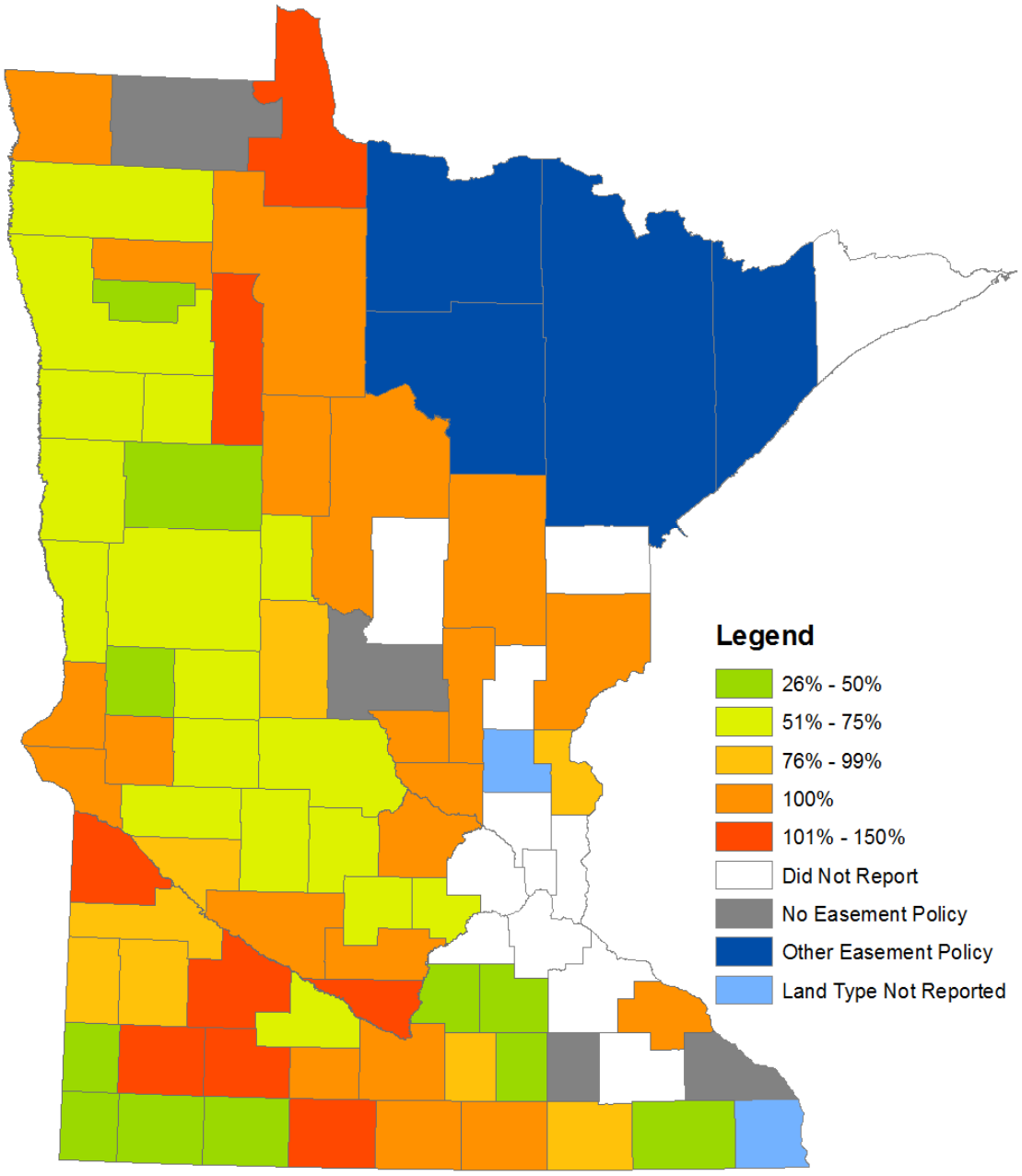


Figure 8. Map of the PCE land EMV as a percent of pasture land EMV. Comparisons are based on 2013 per acre average values reported or calculated midpoint values.

PCE Land and Waste Land EMV Comparisons Waste land is one of the two rural land types analyzed for which the EMV of PCE land was often higher on a per acre basis in 2013 (Figure 9). In total, 32 of the 67 counties reporting EMVs for both waste and PCE land (48%) valued their PCE land higher than their waste land on a per acre basis in 2013. Figure 10 shows the distribution of the per acre EMV relationships between PCE land and waste land. Those counties that valued PCE land more than waste land in 2013 are located throughout much of western Minnesota. Note that counties that valued waste land at more than 150% of the PCE land EMV in 2013 can be found in both the northern and southern parts of the state.

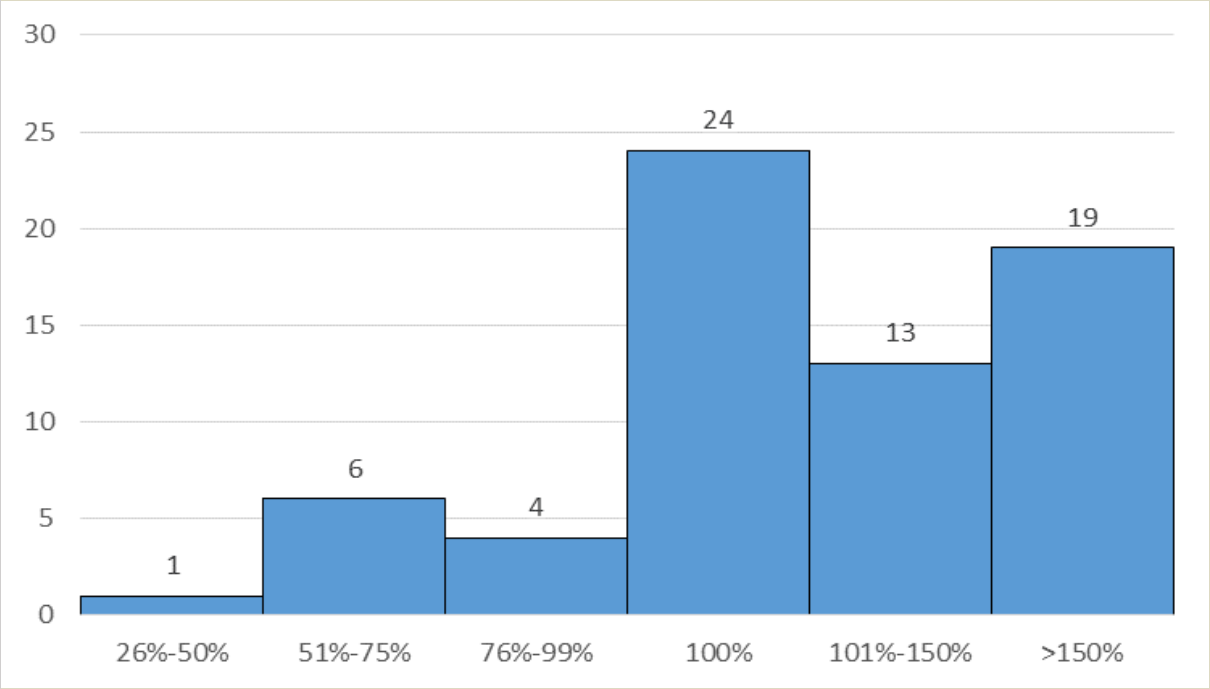


Figure 9. Easement valuation policies as a percent of waste land values. Values are number of counties. Comparisons are based on the 2013 per acre average values reported or calculated midpoint values.

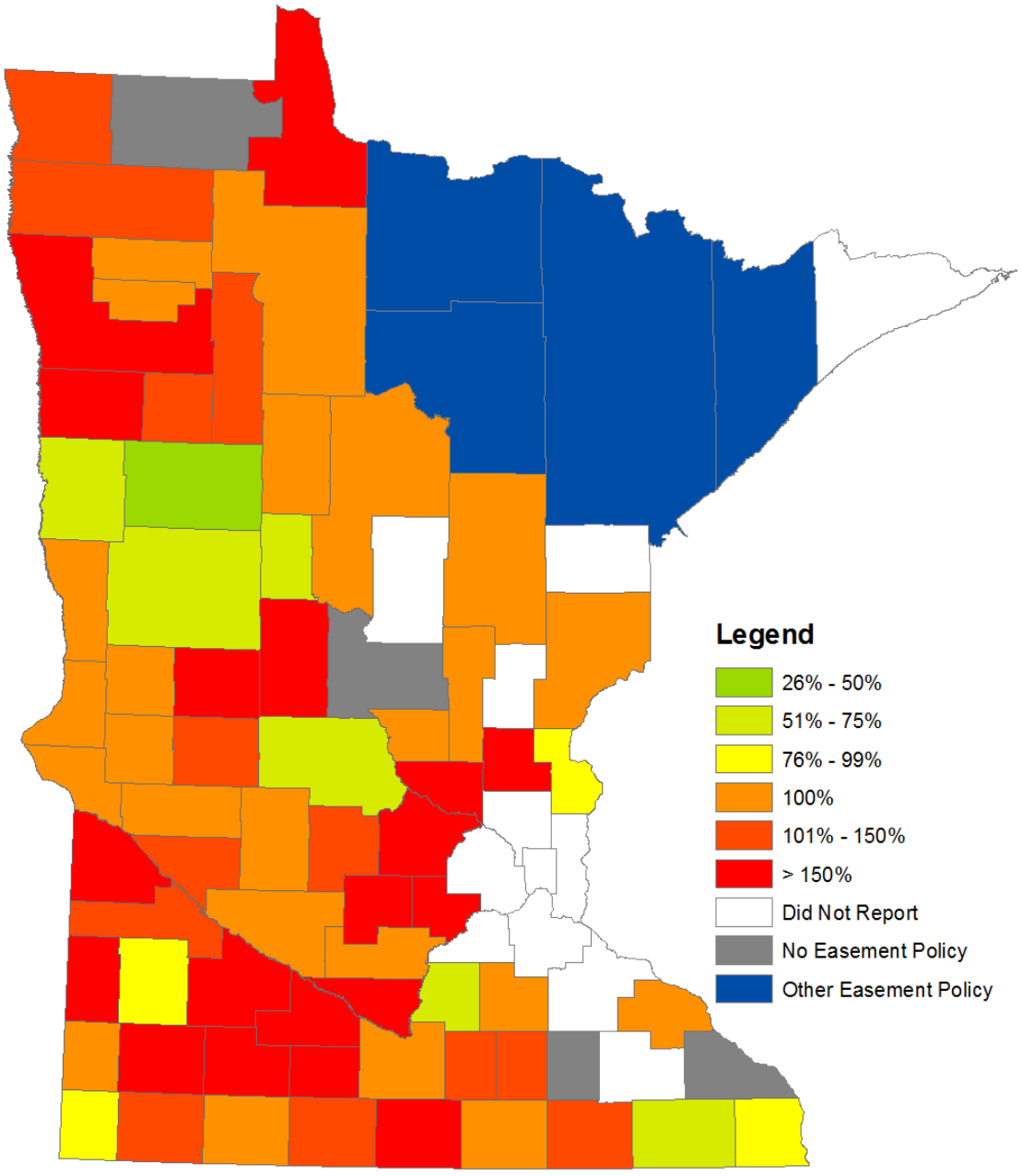


Figure 10. Map of the PCE land EMV as a percent of waste land EMV. Comparisons are based on 2013 per acre average values reported or calculated midpoint values.

PCE Land and Wetland EMV Comparisons Twenty-five counties reported using wetland as a separate land use classification in 2013 (Figure 11). Of those that did, 12 counties (approximately half) valued PCE land higher than the EMV assigned to wetlands on a per acre basis. Eight counties valued their PCE land and wetlands equally, and five valued conservation easement lands less then wetlands. Figure 12 shows the spatial distribution of the 25 counties that used wetlands as a separate land-use category for property tax assessment purposes in 2013. Few patterns are discernable. For example, PCE land valued at more than 100% of wetlands on a per acre basis can be found in counties adjacent to Canada as well as Iowa.

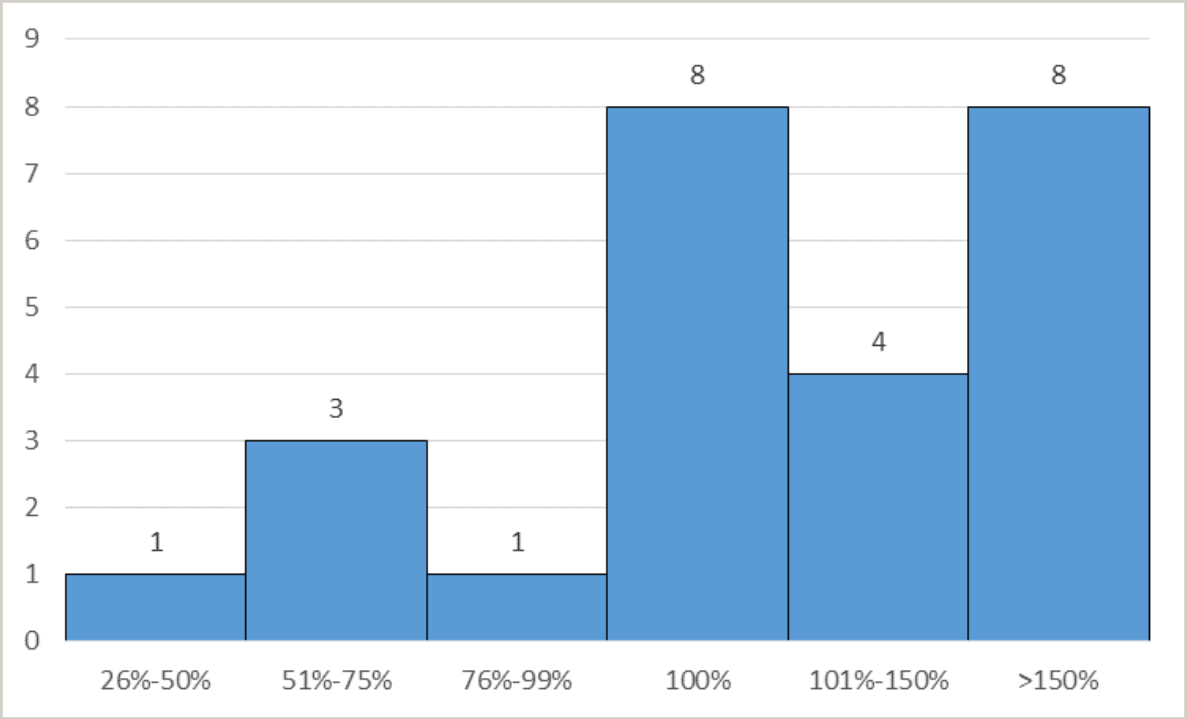


Figure 11. Easement valuation policies as a percent of wetland values. Values are number of counties. Comparisons are based on the 2013 per acre average values reported or calculated midpoint values.

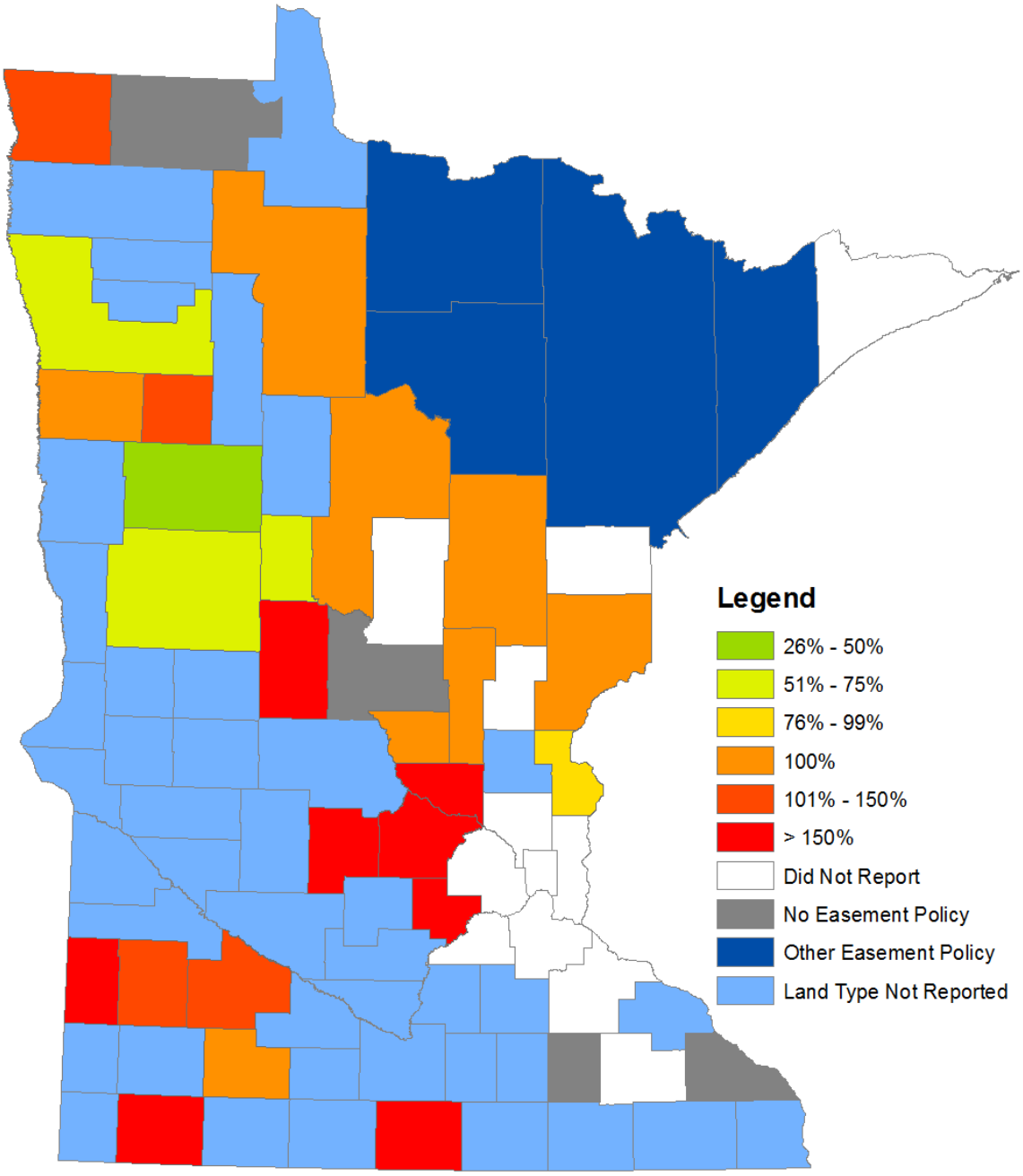


Figure 12. Map of the PCE land EMV as a percent of wetland EMV. Comparisons are based on 2013 per acre average values reported or calculated midpoint values.

PCE Land and Property Tax Class Comparisons

The preceding section compared PCE land values to those of various land-use categories. The following analyses compare the 2013 PCE land values to countywide average values of four property tax classifications: 2a Agricultural, 2a Tillable, 2b Rural, and 2b Timber. The 2013 county average per acre values for each property tax class were obtained from Minnesota Land Economics. Similar to the previous analyses, histograms and maps are used to contrast PCE land value with the county average value for each of the four property tax classifications analyzed. The 2013 countywide average EMV per acre for these four property tax classes can be found in Appendix B.

Class 2a Agricultural Land

Figure 13 shows the distribution of values for PCE land as a percent of class 2a Agricultural land. Figure 14 indicates the spatial patterns of these relationships. Similar to the PCE-tillable land analysis in the previous section, PCE-class 2a Agricultural land values per acre follow similar patterns. For example, the value of PCE land in most southern and western counties was between 11% and 25% of its 2a Agricultural land values in 2013. The counties that value both PCE and 2b Agricultural land the same are, for the most part, clustered in the north central part of the state.

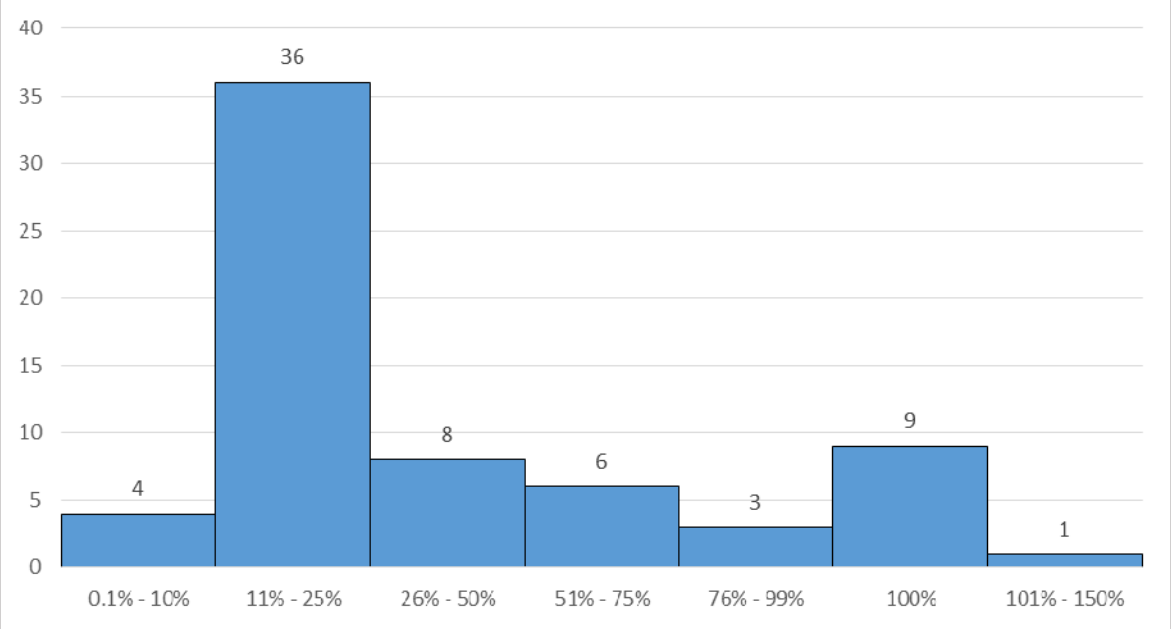


Figure 13. Easement valuation policies as a percent of class 2a Agricultural land values. Values are number of counties. Comparisons are based on the 2013 per acre class 2a Agricultural land value from Minnesota Land Economics.

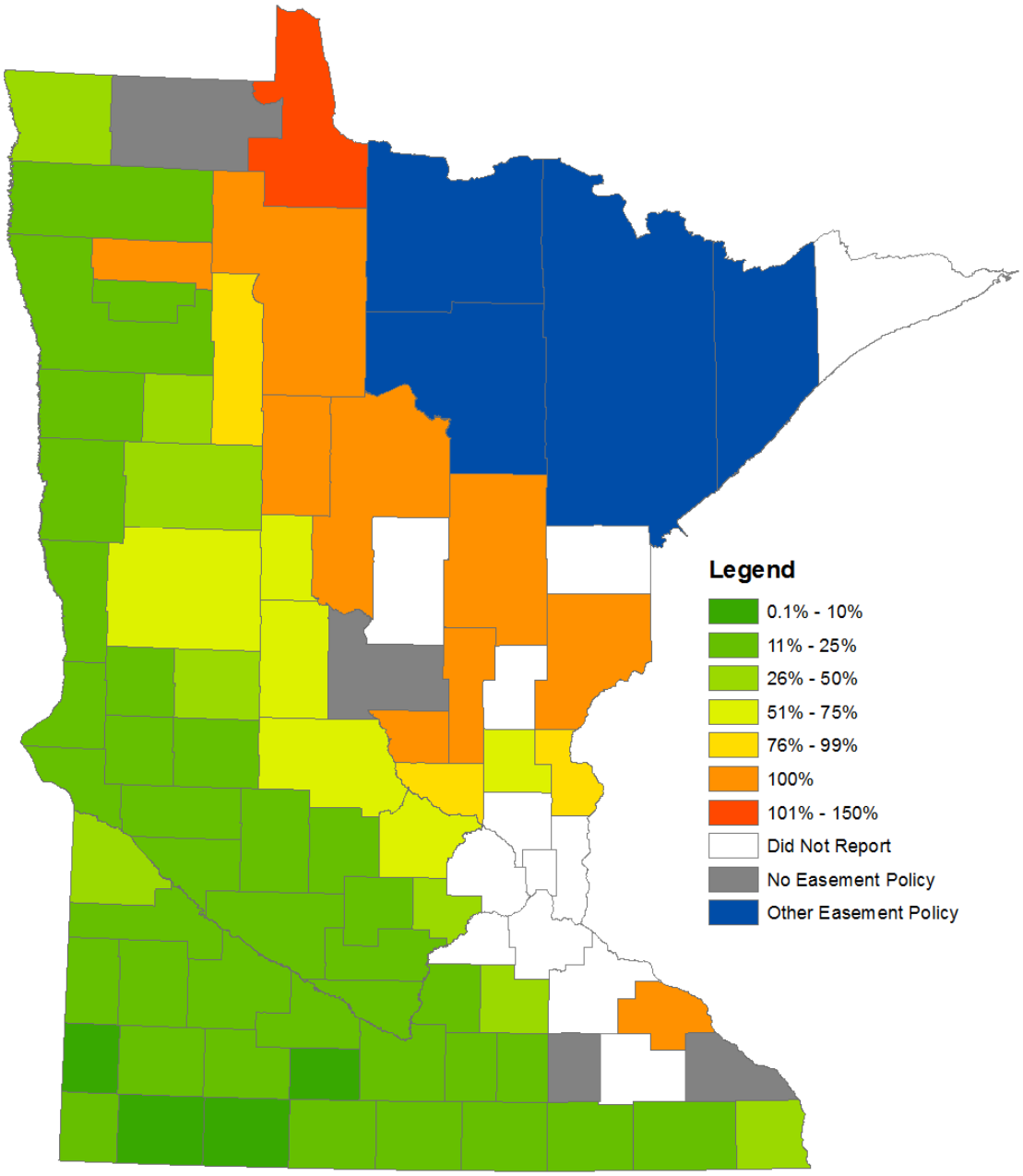


Figure 14. Map of the PCE land EMV as a percent of class 2a Agricultural land. Comparisons are based on 2013 per acre values for class 2a Agricultural land.

Class 2a Tillable Land

The comparisons of PCE-class 2a Tillable land per acre land values are illustrated in Figures 15 and 16. Although the EMV relationships between PCE and 2a Tillable land vary considerably (PCE land ranged from less than 1% to more than 100% of the county average EMV per acre of 2a Agricultural land), the value of PCE land in the majority of counties was between 11 to 25% of its 2a Tillable land in 2013. Note the geographic distribution of these relationships closely resembles the relationship between PCE and 2a Agricultural land; namely the value of PCE land is no more than 25% of 2a Agricultural land value on a per acre basis in much of western and southern Minnesota.

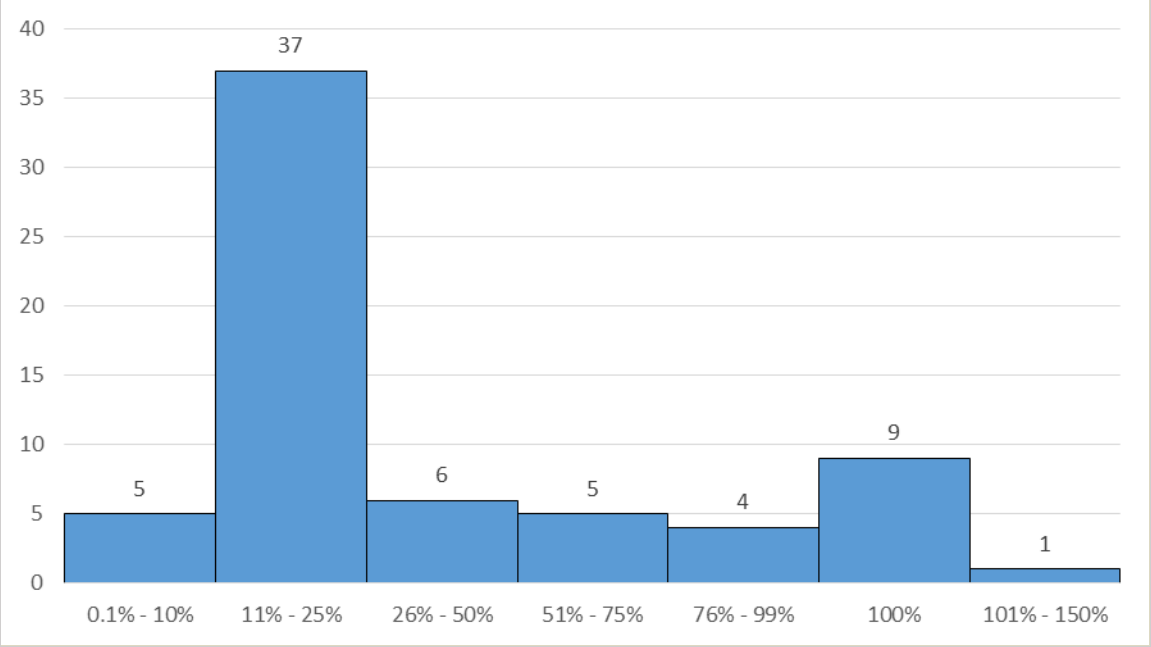


Figure 15. Easement valuation policies as a percent of class 2a Tillable land values. Values are number of counties. Comparisons are based on the 2013 per acre class 2a Tillable land value.

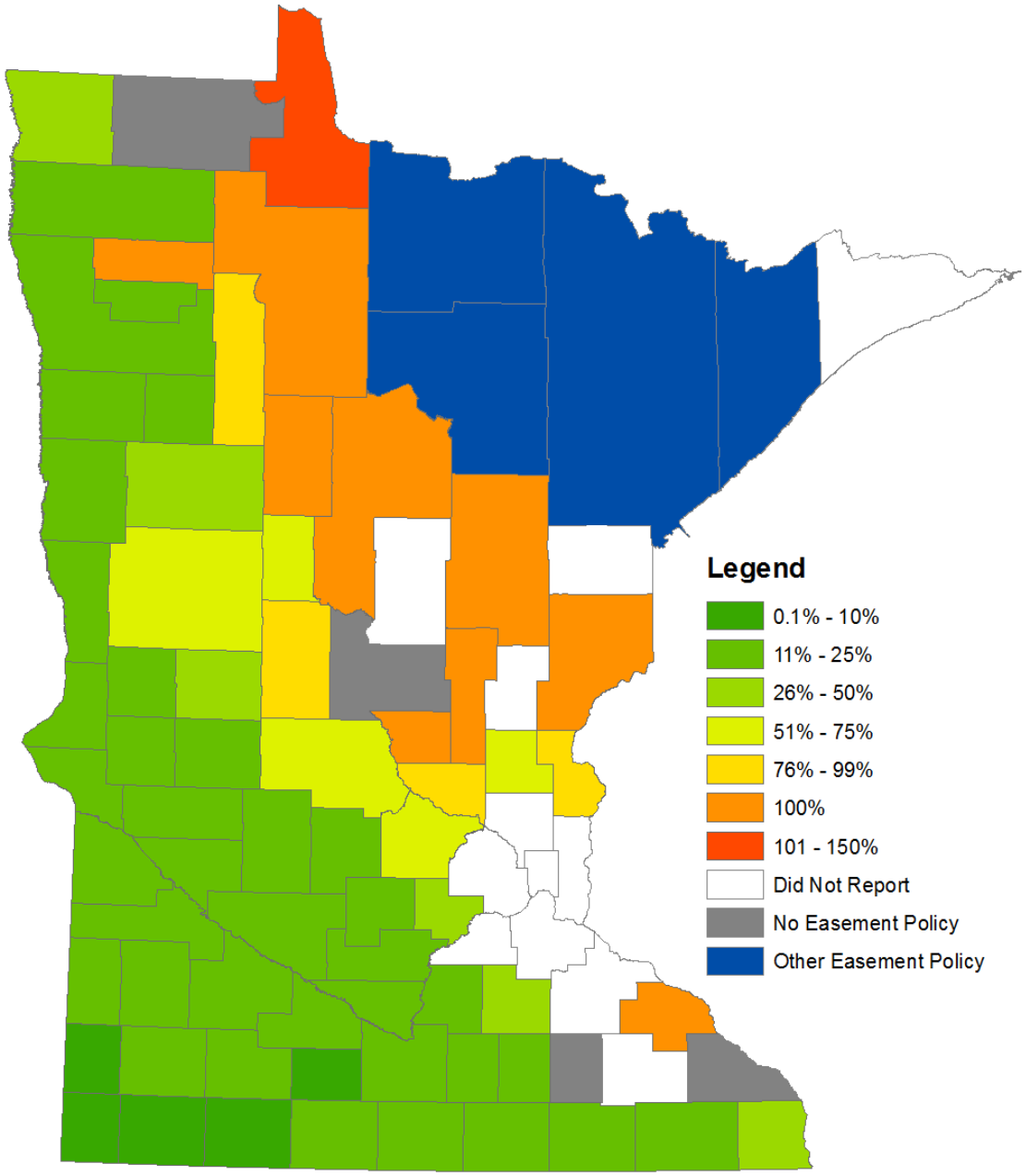


Figure 16. Map of the PCE land EMV as a percent of class 2a Tillable land. Comparisons are based on 2013 per acre values for class 2a Tillable land.

Class 2b Rural Land

Figure 17 contains information on the distribution of the per acre land value relationships between PCE and class 2a Rural land in 2013. Figure 18 indicates the spatial patterns of these relationships. All reporting counties valued their PCE land at more than 10% of their countywide average 2b Rural land in 2013, with most (57 counties) having PCE land EMV that was more than 50% of 2b Rural land EMV. Note that 16 counties had a higher per acre EMV for their PCE land than the average value of 2b Rural land.

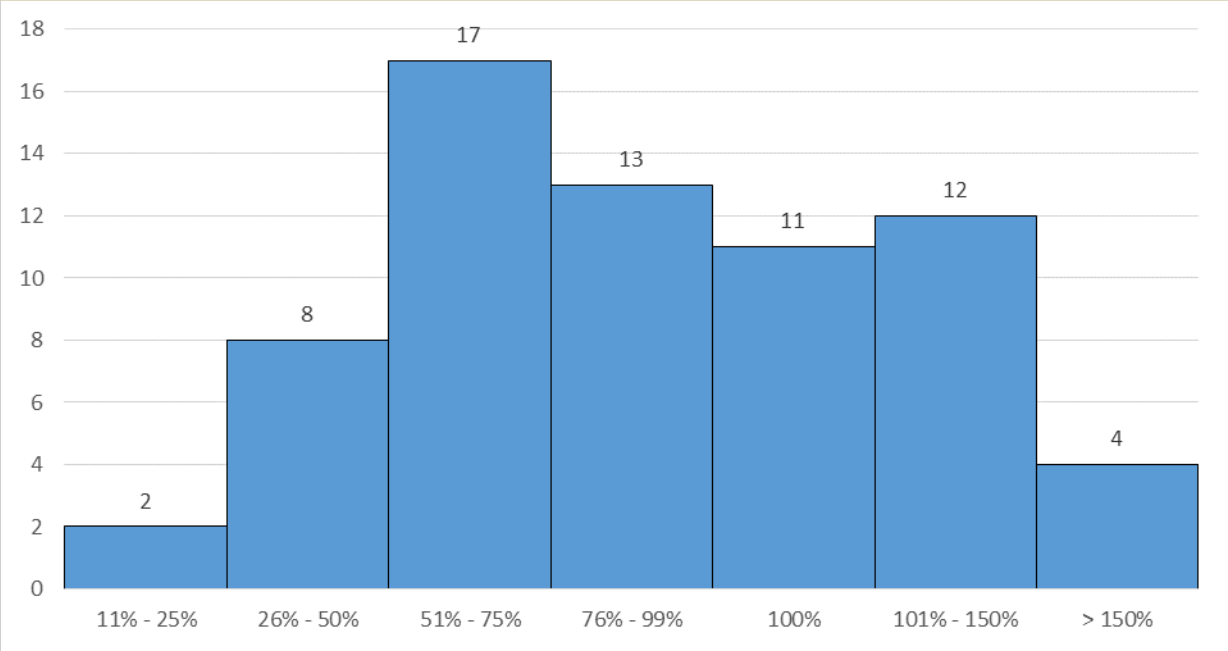


Figure 17. Easement valuation policies as a percent of class 2b Rural land values. Values are number of counties. Comparisons are based on the 2013 per acre class 2b Rural land value.

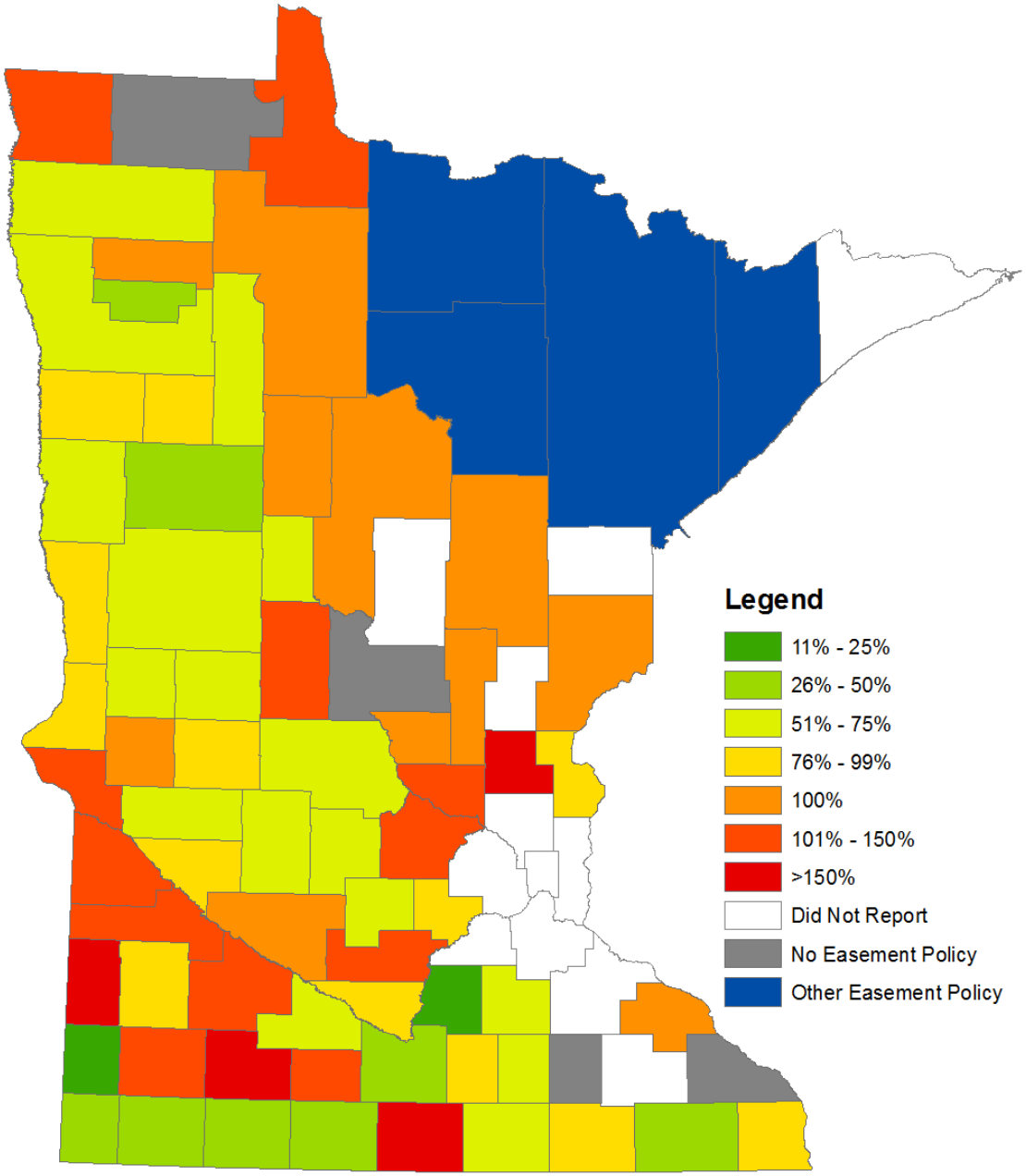


Figure 18. Map of the PCE land EMV as a percent of class 2b Rural land. Comparisons are based on 2013 per acre values for class 2b Rural land.

Class 2b Timber Land

Figure 19 contains information on the distribution of the per acre land value relationships between PCE and class 2b Timber land in 2013, while Figure 20 depicts the spatial patterns of these relationships. In 2013, the EMV of PCE land ranged from 26% to more than 150% of 2b Timber land EMV on a per acre basis. The per acre EMV of PCE land was equal to or less than that of 2b Timber land in all but seven of the 58 reporting counties. Among these 51 counties whose PCE land value was less than its 2b Timberland, there was a relatively equal distribution across each the four categories shown in Figure 19 (i.e., 16 counties at 26-50%, 14 counties at 51 to 75%, nine counties at 76 to 99%, 12 counties at 100%). Note the spatial patterns of the PCE-2b Timber land values are relatively consistent with those of the PCE-wooded land class values shown in Figure 6.

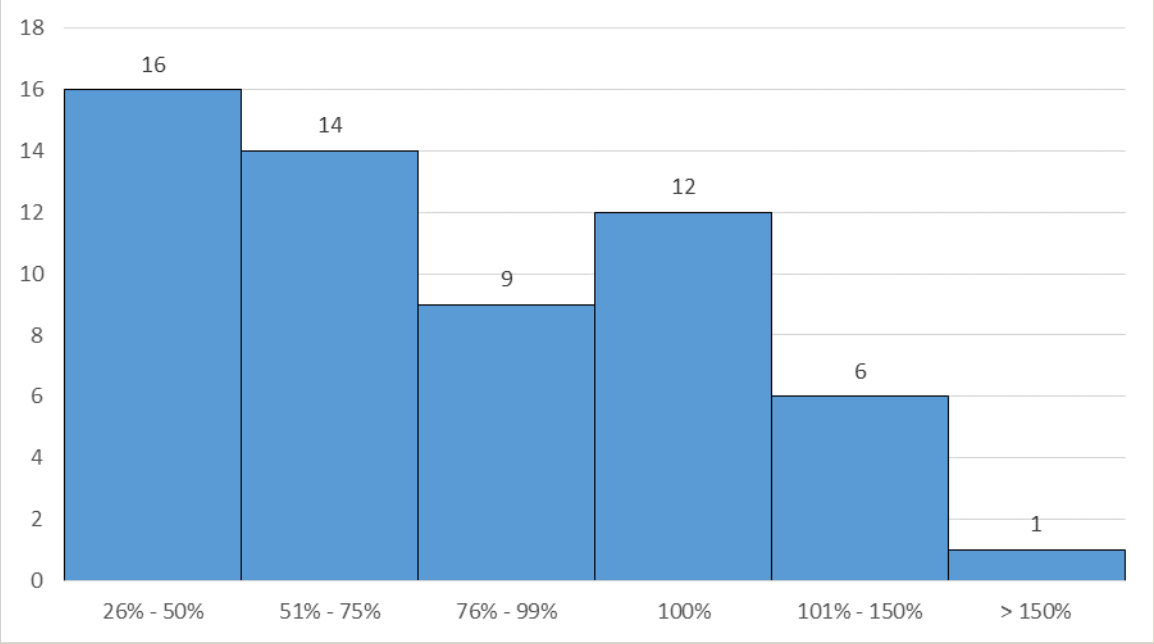


Figure 19. Easement valuation policies as a percent of class 2b Timber land values. Values are number of counties. Comparisons are based on the 2013 per acre class 2b Timber land value.

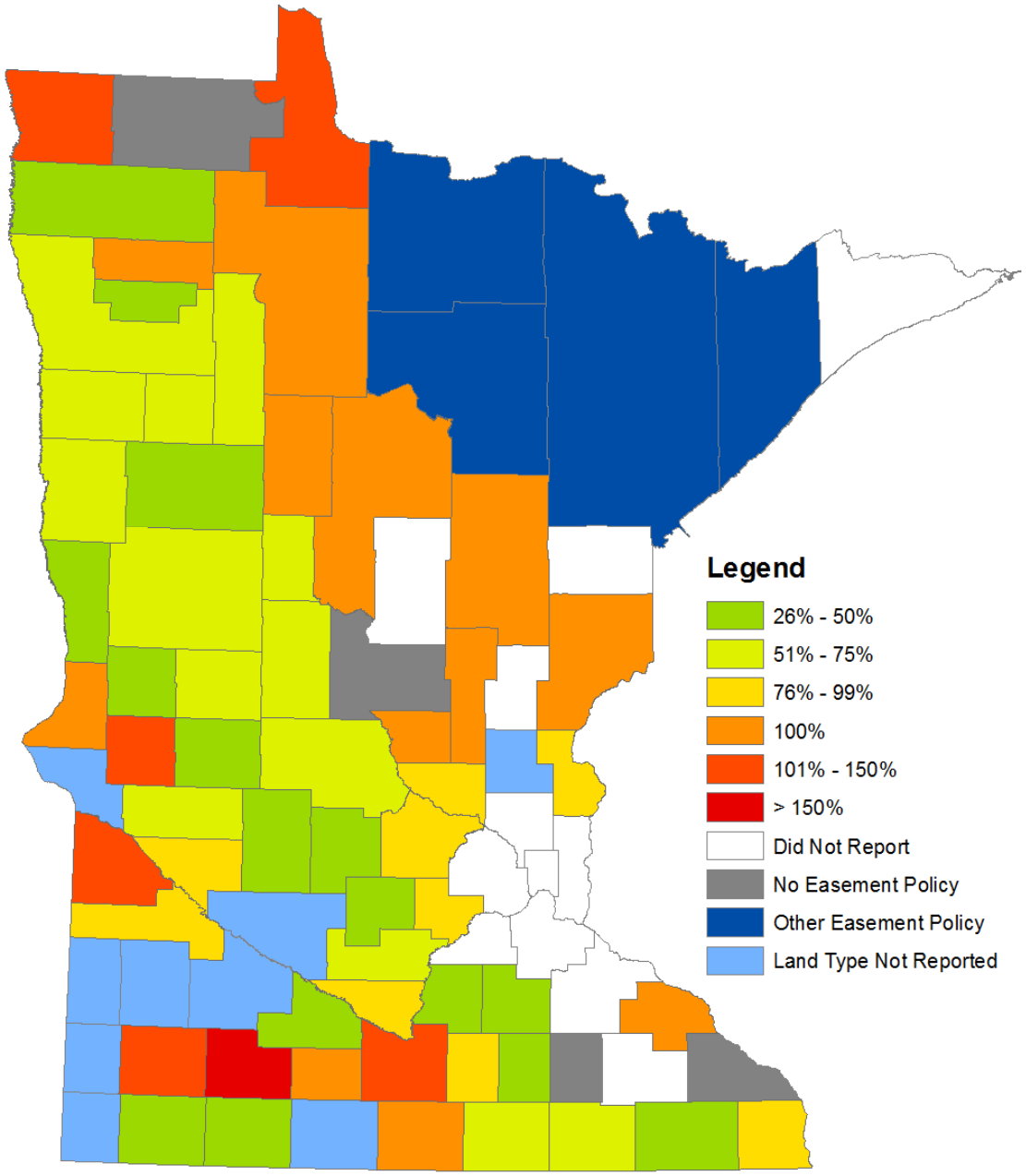


Figure 20. Map of the PCE land EMV as a percent of class 2b Timber land. Comparisons are based on 2013 per acre values for class 2b Timber land.

Summary and Conclusions

The 2013 valuation schedules provide insights on how county assessors value rural land for property tax purposes relative to the value assigned to PCE land. From the data provided by county assessors, several observations can be made. Chief among these is that county assessor rural land valuation policies vary considerably among counties. Similarly, the valuation practices for land subject to a PCE also vary among counties. Data provided by county assessors indicate that most valued PCE land between $250 and $1,500 per acre in 2013, although the EMV per acre for PCE land in eight counties exceeded $1,500 per acre. When compared to specific land-use categories, PCE land EMV was often substantially lower than tillable land values. In most heavily agricultural areas of southern and western Minnesota, PCE land EMV per acre was less than 25% of the per acre tillable EMV. Yet in a few counties, the EMV per acre of PCE and tillable land was the same.

For many of the heavily forested counties in northern Minnesota, the 2013 EMV for PCE land was established on a case-by-case basis and a function of the land rights ceded through the conservation easement. None of the assessors in counties where agriculture is the predominant land use reported such a policy. Based on the 2013 per acre land value schedules reported, nearly all county assessors valued PCE land at between 26 to 100% of their wooded land EMV. The relationship between the per acre values for PCE land and land in the four property tax classifications examined show similar patterns to their comparable PCE land-use value relationships (e.g., PCE-wooded and PCE-2a Timber land).

Chapter 2

Minnesota Permanent Conservation Easement Assessment Practices

Introduction

This section examines how county assessors, in practice, valued PCE land for property tax purposes prior to 2014. For the purpose of the study, the analysis will focus on eight main agricultural, forest, and rural land property type codes (the property type code is indicated in parentheses): agricultural class 2a bare land with more than 34.5 acres (32), rural class 2b bare land with more than 34.5 acres (34), managed forest land class 2c with more than 34.5 acres (35), agricultural class 2a bare land with less than 34.5 acres (37), rural vacant land class 2b bare land with less than 34.5 acres (39), managed forest land class 2c with less than 34.5 acres (40), mixed agricultural class 2a and rural land class 2b bare land with more than 34.5 acres (48), and mixed agricultural class 2a and rural land class 2b bare land with less than 34.5 acres (50). All of these property type code codes are for bare land with no building value. A detailed listing of the property type codes can be found in Appendix C.

Data and Methods

The analysis was conducted using two main datasets, both constructed from easement data obtained from Minnesota Department of Natural Resources (MnDNR) and Board of Water and Soil Resources (BWSR) property records and property tax assessment data from the MnDOR. Staff from MnDNR and BWSR provided GIS shapefiles for all of WFCE (MnDNR) and RIM/CREP (BWSR) easements, respectively, through 2013. MnDNR staff then used parcel-level GIS records to extract a property identification (ID) number or numbers associated with each easement. We then linked these property ID numbers with assessment data in the MnDOR's Market Value by Parcel File. This latter dataset includes every property in the state, listing (for our purposes) its location (minor civil division), estimated market value, and number of acres.

For those eased parcels that we were able to successfully match with data contained in the Market Value File, we created the two datasets that are discussed in this section. Of the original 10,157 WFCE properties provided by the DNR GIS staff, we were able to match 7,929 property IDs. Of the 728 RIM/CREP properties, we were able to match 291. A number of these matched properties were subsequently dropped from our analysis for various data-integrity reasons described below.

Some of the WFCE parcels in the original data were identifiable as "slivers" (i.e., artifact parcels created from the MnDNR GIS identification process). These artifact parcels were removed from our dataset. The structure of the RIM/CREP dataset precluded us from identifying slivers in this dataset.

After the sliver parcels were removed, parcel-level data was aggregated by township. Township summary data includes: township number, county name, total acres for each property type code,

eased acres by property type code, estimated land market value by property type code for the eased acres, noneased acres by property type code, estimated land market value by property type code for noneased, and the year for which the assessor market values were established.

Townships (and incorporated municipalities) were retained in our dataset if they contained at least one easement that: 1) could be match to a property identification number as described above; 2) had nonzero acreage and market value data; and 3) was at least five acres (for the WFCE data). Note the number of eased acres in a township is the sum of all acres on parcels that are partially or completely encumbered by a permanent conservation easement. As such, this number is likely overestimates the number of acres actually eased. However, because we could not match all properties in the original data through the process discussed above, this tends to underestimate the number of eased acres in a township or city (by property type code).

A second dataset was created that contains individual parcel-level data for all eased parcels. Information associated with this dataset includes parcel number, location, property type code, eased acres (WFCE only), and total parcel acres.

Each of these two datasets (parcel-level, township summary) was subsequently subdivided according to the following two types of easements we examined: WFCE and RIM/CREP easements. Thus, this partitioning process producing a total of four data sets which will be discussed separately.

Both of the original datasets contained data on parcels assigned property type codes that are not suitable for the study, such as residential or industrial properties. Consequently, each data set was sorted by property tax code, with only property tax codes for those land uses relevant to the types of easements examined in this study (e.g., rural land with no buildings) retained. Table 8 shows the reduction in data records that occurred during this filtering process. In order to strictly look at bare land EMVs, property type codes that included buildings or were otherwise not rural, agricultural, or forest land were excluded from the dataset. The property type codes containing PCE of interest were 32, 34, 35, 37, 39, 40, 48 and 50. Further, parcels that contained more than one easement and easements that encompassed more than one parcel (RIM/CREP only) were removed. These filters were necessary to ensure that parcels were not double counted or our estimates of EMV and/or area covered by easements distorted.

Table 8 indicates the number of parcels and townships before and after applying these filters. Few townships are removed when the property type code filters are applied; 5% were removed for WFCE and 17% for RIM/CREP easements. Note there are more townships containing RIM/CREP easements than WFCE, yet there is nearly a two order of magnitude difference in the number of parcels (after filtering) subject to a WFCE compared to parcels subject to a RIM/CREP easement. So even though we have fewer townships with WFCE, these townships represent far more parcels and aerial coverage than townships with RIM/CREP easements. Appendices D and E contain township summary information on WFCE and RIM/CREP easements, respectively.

Table 8. Reductions in available townships and parcels due to filtering.

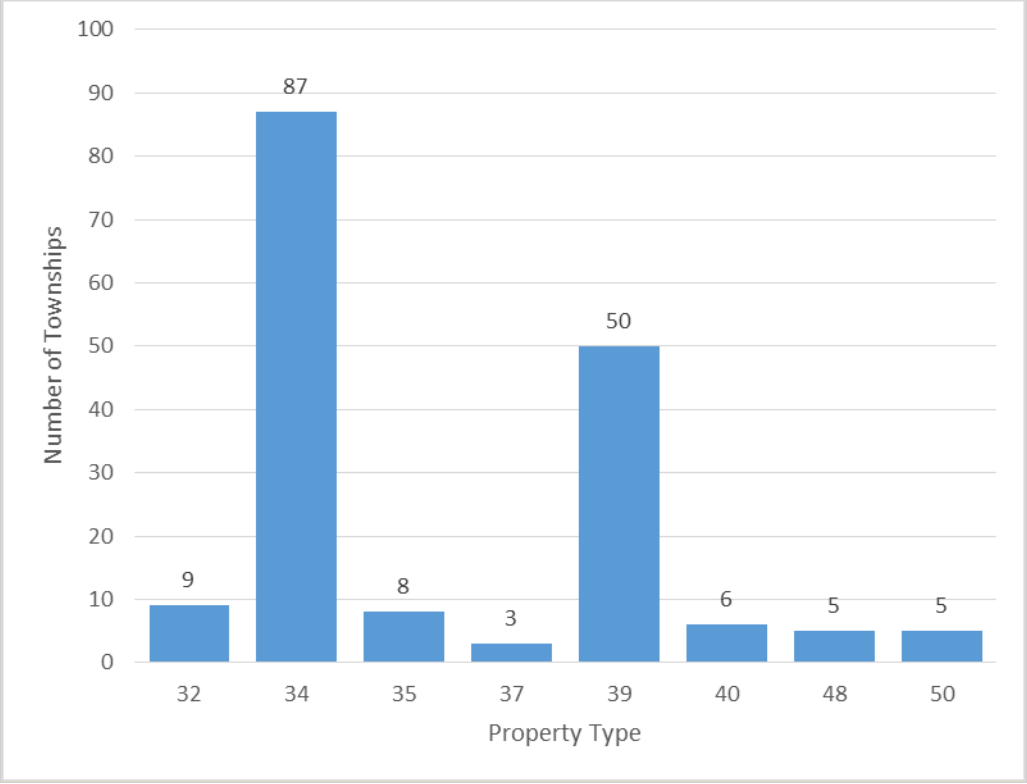
	Records before filtering	Records after filtering	Number filtered	Percent filtered
WFCE township summary	99	94	5	5%
RIM/CREP township summary	156	130*	26	17%
WFCE parcel-level	7,929	7,541	388	5%
RIM/CREP parcel-level	291	79**	212	73%

* = One RIM/CREP township had no values for noneased land and hence had to be removed, making the total number of RIM/CREP townships used in this study 129.
** = Due to additional filtering, the number of parcels for RIM/CREP is lower than the number of townships. For the purpose of our analysis, this is, however, not a problem since data that is filtered on the parcel level is included on the township level.

Property Type Codes by Townships and Easements

The distribution of property type codes for the respective easement types (WFCE, RIM/CREP) is shown in the figures below. Note the same township could be listed as many as eight times if it contained easements on all eight bare-land property type codes. Consequently, the total number of townships with easements is smaller than the total number of townships with easements when summed by property type code.

Figure 21 shows the number of townships for each property type code for WFCE. The most common property type code for these easements is 34 (bare rural land class 2b with more than 34.5 acres). Easements on this property type code can be found in 87 townships, meaning only seven townships did not report easements on this property type. The second most common property type code is class 2b rural vacant land with less than 34.5 acres, found in 50 townships.



Bare Land Property type code Classifications:
32 = Ag > 34.5 ac
34 = Rural > 34.5 ac
35 = M. Forest > 34.5 ac
37 = Ag < 34.5 ac
39 = Rural < 34.5 ac
40 = M. Forest < 34.5 ac
48 = Ag/Rural > 34.5 ac
50 = Ag/Rural < 34.5 ac

Figure 21. Number of townships with WFCE in the respective property type code for year 2013.

Figure 22 shows the number of townships for each property type code for RIM/CREP easements in 2013. For RIM/CREP easements, the most common property type codes are 32 (86 townships), 48 (32 townships), and 37 (27 townships). Just over half of the townships (86 out of 130) with RIM/CREP easements were found on property type code 32 land (class 2a bare agricultural land with more than 34.5 acres).

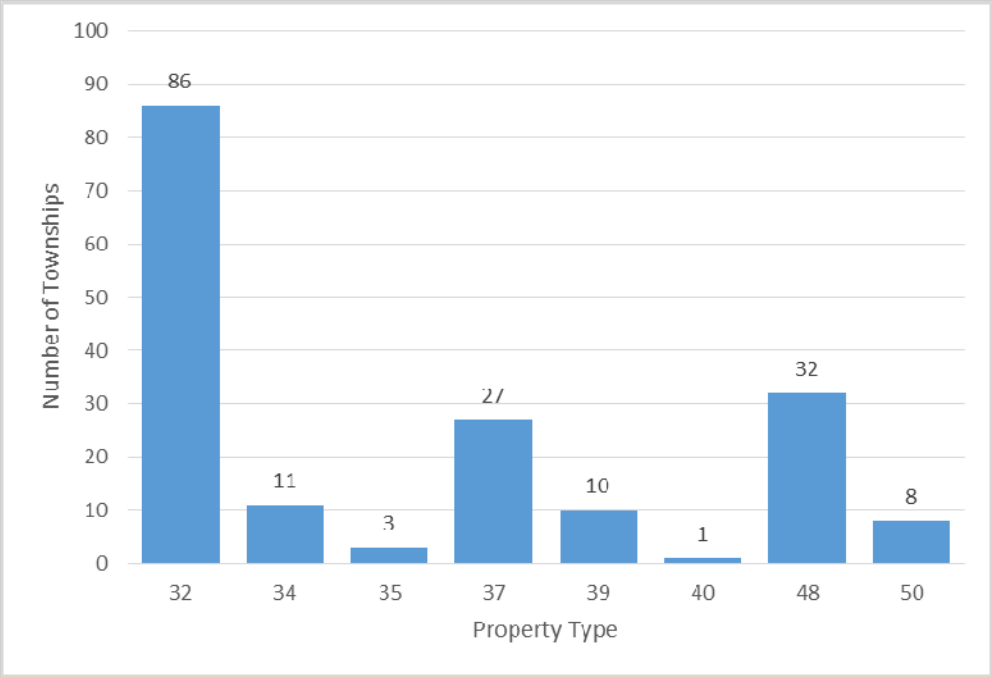


Figure 22. Number of townships with RIM/CREP easements in the respective property type code for year 2013.

The data displayed in Figures 21 and 22 suggest that easements are typically conveyed on bare land that is associated with the land use prior to the easement conveyance. For example, RIM/CREP easements are most commonly found on property type codes 32, 37, and 48 which, as expected, are agricultural or mixed agricultural/rural land uses. Similarly, only four townships with RIM/CREP easements were found on land classified as Managed Forest (property tax codes 35 and 40). Similarly, WFCE land can be found in almost every township on property type 34.

Parcel Coverage

Significant differences in aerial easement coverage were found between parcels enrolled in WFCE and parcels enrolled in RIM/CREP easements. Figure 23 shows that the vast majority (95%) of parcels containing WFCE are completely or nearly completely covered by an easement. The main reason for the large number of parcels completely encumbered by WFCE is the aerial extent of these easements. For example, the PCE on UPM-Blandin forest land covers approximately 188,000 acres.

Figure 24 shows the equivalent breakdown of spatial coverage for parcels subject to a RIM/CREP easement. Note our data only includes parcels that have one easement and only easements that encompass a single parcel. Unlike for parcels containing WFCE, the coverage of a RIM/CREP easement as a percent of the total parcel area varies considerably, with 44% of all

parcels covered by no more than 10% by a RIM/CREP easement. Note our filtering process eliminated RIM/CREP easements that extend across several parcels, which likely somewhat distorts this distribution.

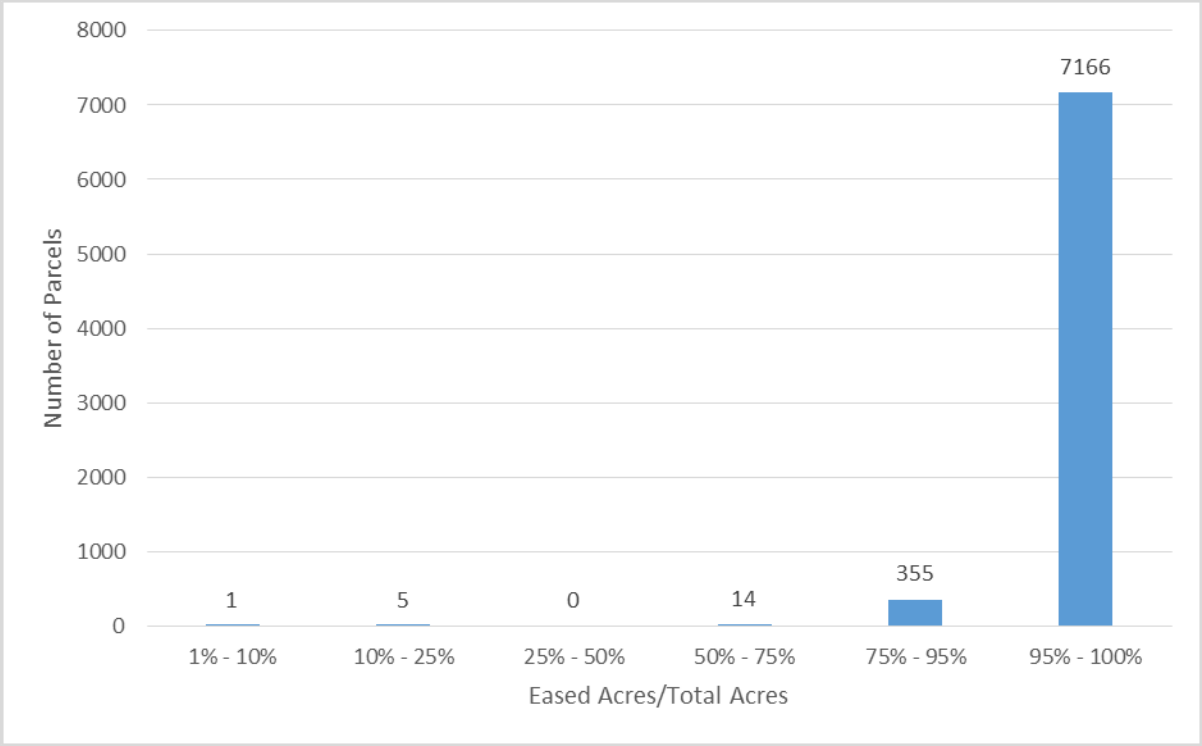


Figure 23. 2013 percent parcel coverage with WFCE.

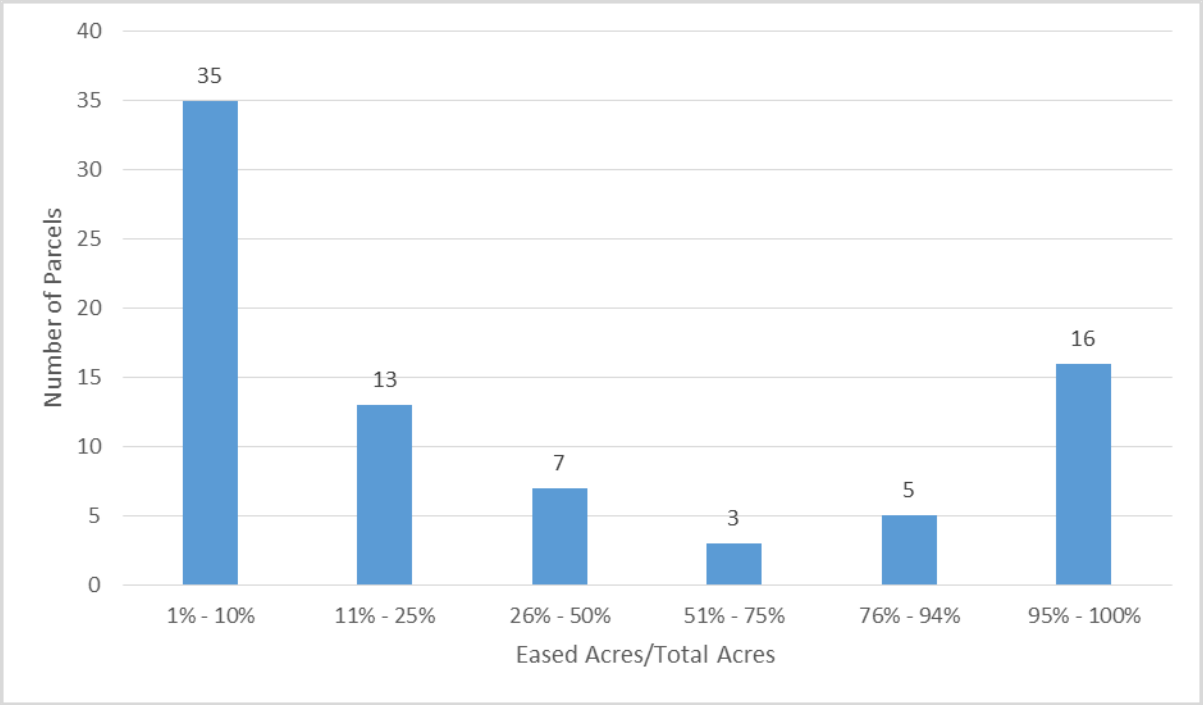


Figure 24. 2013 percent parcel coverage with RIM/CREP easements.

In summary, the analysis indicates there are far more parcels containing WFCE compared to RIM/CREP easements. The analysis also illustrates different distributional patterns among the two types of easements analyzed in terms of the percent of a parcel covered by an easement.

Eased EMV/Noneased EMV

An analysis of the per acre eased EMV to noneased EMV was conducted using township summary data. Determining the reduction in EMV per acre for land subject to a PCE occurred in two steps. First, the EMV for all eased parcels was summed across the selected property type codes and then divided by all eased acres associated with these property type codes within a township. The equivalent was done for noneased EMV and noneased acreage using the same property type codes that were used for summing a township's total eased EMV and eased acreage. After these summaries were completed, the average EMV per acre for eased land was divided by average EMV per noneased acre and then multiplied by 100 percent to determine the percent ratio:

$$\textit{Percent Ratio} = \frac{\textit{Total eased EMV/Total eased acres}}{\textit{Total noneased EMV/Total noneased acres}} * 100\%$$

Note that the percent ratio is not the absolute reduction in EMV, but the percent the eased EMV is of the noneased EMV (per acre). If, for example, an eased acre is value at $750 per eased acre and noneased land is valued at $1000 per acre, then the ratio would be 0.75 or 75%. This would be equivalent to a 25% reduction.

It is important to note that these ratios are not weighted. This is especially important for RIM/CREP easements which, unlike WFCE, tend not to cover the entire parcel. If there is a large difference in the number of eased and noneased acres for a given township, using a weighted average (without dividing by the respective acres for eased and noneased), could substantially impact our estimates of EMV/acre reduction for eased land. Using per acre value allows us to compare the EMVs in a meaningful way as it does not depend on how many acres are eased or noneased. If a township has only a few acres of RIM/CREP easements it can still be compared to the noneased acres within that township.

Due to the potential for data entry errors, we defined a nonreduction to be any township where the percent ratio is between 95 and 105%. Had we defined townships that did not reduce EMV for eased property as those with a percent ratio strictly at 100%, the number of nonreducing townships would be lower.

Figure 25 displays the township-average percent reduction in EMV per acre for townships containing WFCE. The majority of PCE land in townships containing WFCE (68%) was valued at or less than comparable noneased land in the township. Of the townships whose PCE land was valued higher than the noneased land, most easements are located on smaller tracts, typically less than 100 acres. The two most common changes in eased land EMV relative to noneased EMV were either an increase between 5 and 25% or a decrease between 5 and 25%. The largest increase in EMV per acre for WFCE was found in a township in Itasca County. In this township, its 78 eased acres were valued at twice that of noneased land on a per acre basis. One possible explanation for this might be the ability of the land to still generate income through timber

harvesting after the easement was conveyed. The lowest percent ratio was also found in an Itasca County where 6,294 acres of WFCE land was valued approximately 36% of comparable noneased land. Across all townships, the ratio of eased to noneased EMV per acre for WFCE is 94%.

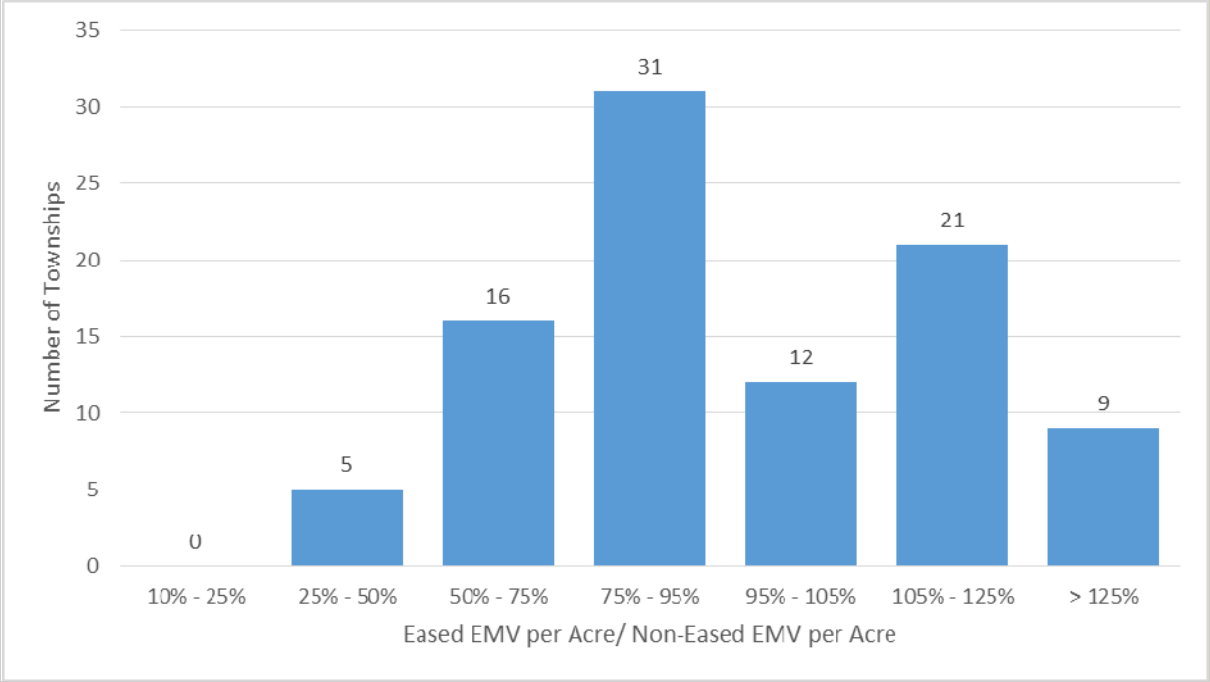


Figure 25. 2013 eased EMV per eased acre as percent of noneased EMV per noneased acre for WFCE.

Figure 26 shows the distribution of the eased-to-noneased EMV per acre, by township, for RIM/CREP easements. This figure suggests that RIM/CREP easements were commonly valued less than comparable noneased land in the township. One hundred and two of the 128 townships (74%) were determined to have a reduction in the value of eased land of at least 5% when compared to the EMV per acre of noneased land. The most common change in value for PCE land for lands encumbered by a RIM/CREP easement was a 5 to 25% reduction, which occurred in 45 townships. Of the two townships that had a percent ratio of more than 1.25, one contained 220 acres of eased land and had an eased-to-noneased percent ratio of 1.26, while the other had 20 PCE acres and an eased-to-noneased percent ratio of 1.86. Across all townships, the mean reduction in EMV per acre was 24% for RIM/CREP easements.

Geographic patterns of eased-noneased EMV per acre reductions are not apparent. Figure 27 displays the geographic distribution of township-average EMV per acre reduction for land subject to a WFCE. Even within a county, reductions vary (sometimes substantially) between townships. For example, six different percent reduction classes are observed in Itasca County, ranging from 25 to 50% to more than 150% of comparable noneased land. Similar results were found for the remaining counties with WFCE. The reason why there are townships where the EMV of eased land is higher than noneased is not known.

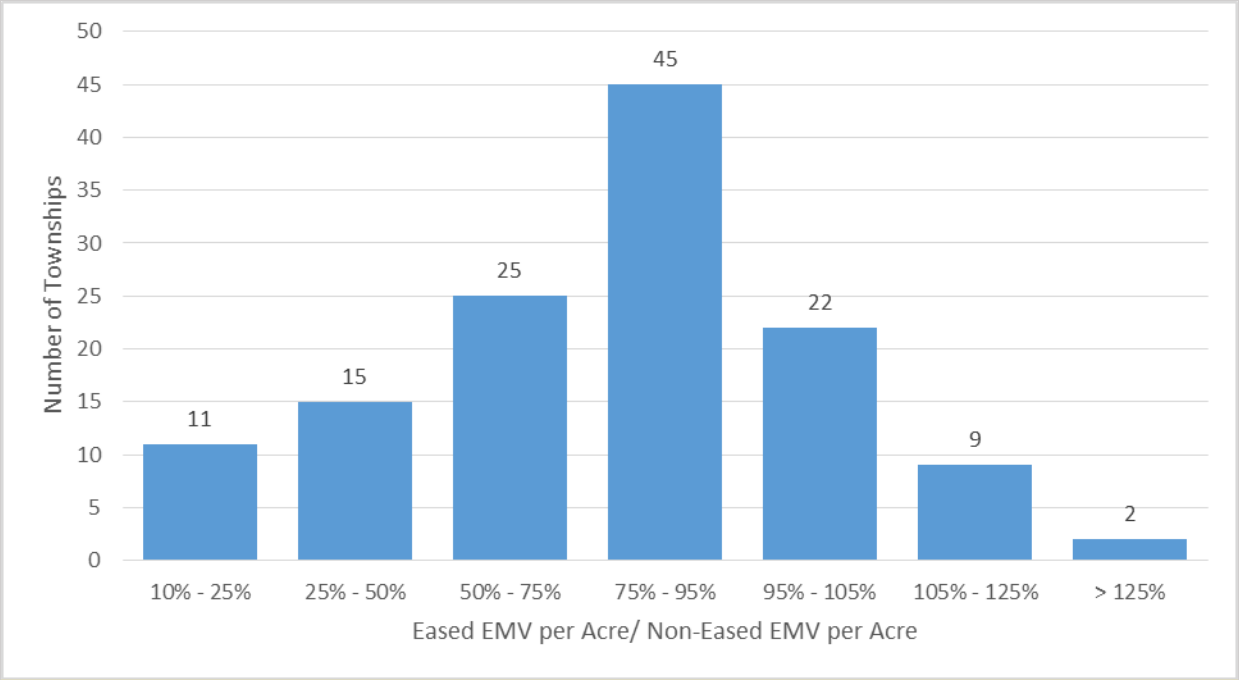


Figure 26. 2013 eased EMV per eased acre as percent of noneased EMV per noneased acre for RIM/CREP easements.

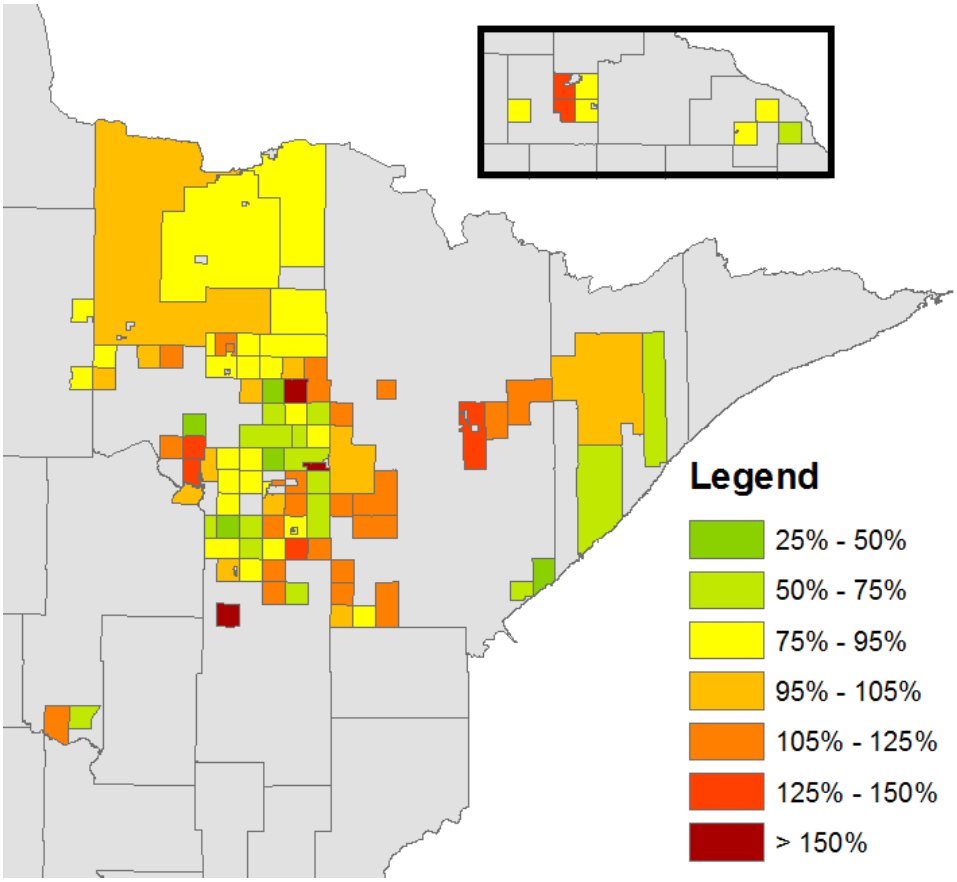


Figure 27. Geographic distribution of township average ratio of the EMV of eased land per eased acre as a fraction of noneased EMV per noneased acre for WFCE. The window contains townships in Rice and Wabasha counties.

Townships containing RIM/CREP easements were also observed to be valued differently within a county (Figure 28). The township with the greatest average reduction in EMV per acre for eased land (88%) is in Renville County. There were 102 eased acres in that township, compared to 4,366 RIM/CREP acres countywide. The township with the highest ratio of eased-to-noneased EMV per acre is in Pope County, with its 20 eased acres valued 86% more than comparable noneased land. Across all townships, RIM/CREP-eased land was valued at 76% of noneased land on a per acre basis.

Figure 29 shows the distribution of the percent ratios for both easement types across all townships with easements. The y-axis indicates the percent ratio. A township that values eased land at 75% of the noneased land would be represented on the line y = 0.75. The x-axis does not serve any function other than to separate townships from each other. Note there are more townships containing RIM/CREP easements than WFCE. The graph illustrates there are more townships containing WFCE where the EMV per acre for eased property is higher than comparable noneased property (i.e., above the 100% line) than townships containing RIM/CREP easements. Likewise, more townships with RIM/CREP easements are found with low percent ratio values (< 0.5) than there are for townships containing WFCE.

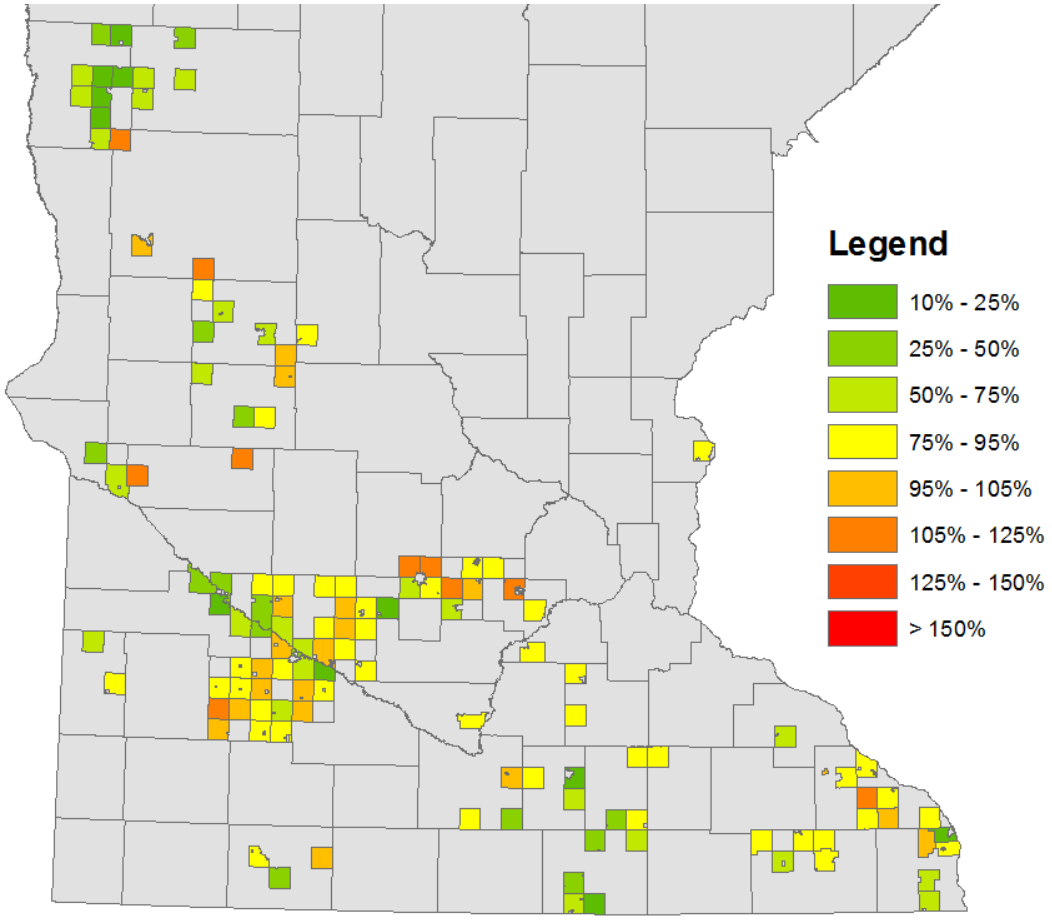


Figure 28. Geographic distribution of township average ratio of the EMV of eased land per eased acre as a fraction of noneased EMV per noneased acre for RIM/CREP easements.

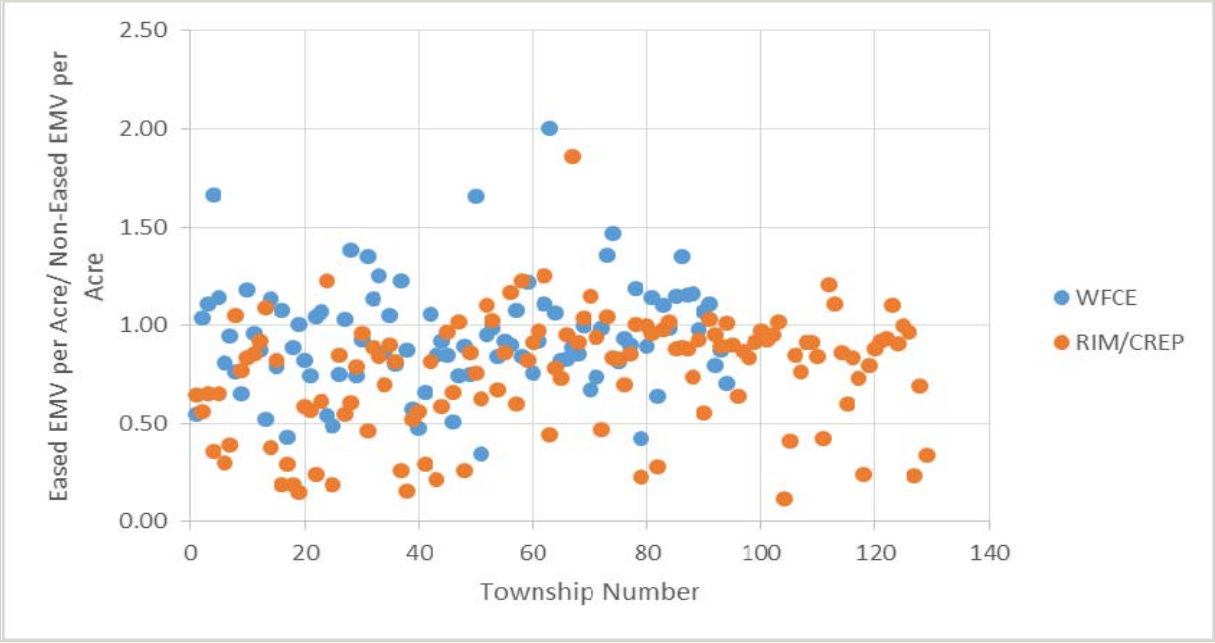


Figure 29. Reductions for WFCE and RIM/CREP townships.

Table 9 contains a summary of the data presented in the previous figures in this section. First, there are more townships containing RIM/CREP easements. Second, the EMV per acre for land with RIM/CREP easements tends to be reduced more than land with WFCE when compared to the EMV per acre for comparable noneased land (96 townships or 74% for RIM/CREP vs. 52 townships or 55% for WFCE). WFCE land, in contrast, is found in more townships where the EMV of eased land was higher than comparable noneased land (32% for WFCE vs. 9% for RIM/CREP). This is further supported by the fact that the average reduction for WFCE land was 6% and 24% for RIM/CREP land. The lowest percent ratio was found in townships containing RIM/CREP easements (12% of noneased value), while the highest percent ratio was found in townships containing WFCE (200% of noneased land). Looking at Figure 29, one can see that percent ratios above 150% were infrequent (four townships across both easement types). EMV per acre reductions of the same or even a greater magnitude (50%) were far more common, especially for RIM/CREP-eased land. For that reason, both the mean and the median percent ratios lie below the 100% mark. The average percent ratio across all townships is 83%, which is equivalent to a 17% reduction in value. Only 15% (34) of all townships did not change the value of eased land compared to noneased land.

Table 9. Summary of township level findings. Numbers represent number of townships.

	WFCE	RIM/CREP	TOTAL
Townships reducing value	52	96	148
Townships not reducing value	12	22	34
Townships increasing value	30	11	41
Average across all available townships	0.94	0.76	0.83
Min. ratio	0.35	0.12	0.12
Max. ratio	2.00	1.86	2.00
Median	0.92	0.84	0.86

Data Uncertainty

In carrying out the analysis, two main challenges with the data were identified. The first is the uncertainty about how land-use classifications and/or property tax codes for a given parcel might have changed once an easement was conveyed. Some county assessors indicated their county's policy was to change the land-use classification once a PCE is conveyed. For example, a parcel that used to be tillable land would be classified as waste land once subject to a PCE. In most cases, per acre EMVs associated with these two land uses are very different. Additionally, a parcel that used to be in agricultural use property tax code might have been reclassified from type 32 to type 48 (i.e., agricultural to agricultural/rural). Together, these two factors limit the accuracy of our before-after easement EMV comparisons.

Second, the inclusion of very small acreage parcels might have influenced our results. These parcels may have been generated by GIS software when digitizing the easement acreage and/or produced when by the statistical software package we used to analyze the data. In both cases, these "sliver" parcels pose a challenge when conducting the township level analyses. This is especially the case with small acreage parcels that could be cut off from another township or county and were then added to different administrative unit. The effects of these errors, to the extent they exist, would be the greatest for townships that only have small number of eased acres. For example, our analysis counts 90 eased areas in a township but, due to slivering, 5 of these 90 acres are actually located in the adjacent township. While we attempted to exclude these

slivers, some may have inadvertently been included or very small easements with only a few (<5) acres excluded. Overall, the impact of these errors of omission and commission are expected to be minimal.

Conclusions

The objective of the analysis described in this chapter was to determine whether eased lands were, in practice, subject to reductions in EMV per acre. Generally speaking, greater EMV per acre reductions were found for land with RIM/CREP easements than for WFCE lands. One reason for this disparity might be the continued ability to use forest lands subject to a conservation easement for income-producing purposes (e.g., timber income) after the WFCE was conveyed, which is likely not the case for most (possibly all) RIM/CREP lands.

The reason(s) why some eased land EMV per acre was found to be higher than comparable noneased land is not known. Often times, we found smaller tracts of land were valued higher when an easement was present. In contrast, larger tracts of eased land were typically valued lower than noneased land in the same township. Both of these conditions, to the extent they existed, were often not uniform across townships within the same county. Due to the variability in percent ratios between townships in the same county, it is difficult to draw any conclusion other than eased land EMV per acre was, on average, reduced for both easement types when compared to similar noneased land.

Several challenges arose during the course of the analysis. First, there remains some uncertainty as to whether assessors changed a parcel's land-use classifications and/or property type code once an easement was conveyed. Second, there may have been special circumstances or unique features that were not reflected in the data that may have had an influence on the value of eased land. For example, a small area of a parcel subject to a RIM/CREP easement might contain a particularly valuable ecological feature such as a rare wetland.

Chapter 3

Market Analysis of Permanent Conservation Easement Land Sales

Introduction

This section of the report describes the results of a statistical analysis of real estate transactions to examine whether land markets reflect the presence of a PCE. A conservation easement restricts a property's future uses to one with presumably lesser economic value. Because the easement goes with the land, a potential buyer of a PCE-restricted property will be subject to the same restrictions and so, possibly, might be willing to pay less than if the same property were unrestricted. The objective of the present analysis is to use transaction evidence to determine if markets differentially price properties with and without easements and to quantify that difference if it exists.

A few studies have looked at property tax assessment practices with respect to the valuation of eased properties (Lee and Taff 1990, Harpankar and Taff 2004, MnDOR 2007), but only two (that we know of) looked directly at market evidence of how easements affect land sale prices. Shultz and Taff (2004) found sale price reductions were associated with long-term (20 or more years) U.S. Fish and Wildlife Service wetland easements in North Dakota. Taff and Weisberg (2007) showed that even short-term cropping rights restrictions—specifically those under the federal Conservation Reserve Program—were associated with sizeable reductions in sales prices, compared to properties that were not so restricted.

The present study applies analysis techniques similar to those used by Taff and Weisberg to compare the sale price of unencumbered properties to the sale price of properties encumbered by permanent conservation restrictions under the state's RIM program or the parallel CREP, which couples federal and state permanent easement payments. Both programs pay the landowner a fixed amount, in exchange for permanently relinquishing the rights to grow crops or otherwise shift the land to a prescribed permanent cover and managed according to a prescribed conservation plan.

Data and Methods

Prior to 2002, Minnesota agricultural land sales with conservation restrictions, if known, were discarded from the "arms-length" sales data reported through Minnesota Land Economics web site (*http://www.apec.umn.edu/landeconomics).* Since that time, however, official agricultural land sales files record whether the property is encumbered by a conservation easement, how much of the property is encumbered, and whether the easement is short term (e.g., CRP) or permanent (e.g., RIM or CREP). (There are other easement types noted in the sales records, such as U.S. Fish and Wildlife Service easements, but these are not included in the present analysis. Nor are development rights easements donated to nonprofit land trusts.)

For this study, we start with all sales of agricultural property in Minnesota from October 1, 2002 through September 30, 2013. All sale prices are adjusted to January 1 of the sale year, and also adjusted by the MnDOR for contract terms such as seller (i.e., contract for deed) financing. We exclude sales with per-acre prices over $15,000 and sales that had more than one type of conservation easement. We also exclude any sale with an easement that is not either RIM or CREP, such as the short-term CRP easements. The agricultural land sales were grouped according to their geographic location.

Of the 24,030 agricultural land sales we examined, 322 were listed as being restricted in whole or in part by a RIM or CREP easement. The location and date of these "eased sales" are shown in Table 10. A map indicating the region boundaries that were used in the analysis is shown in Figure 30.

Table 10. Minnesota agricultural land sales partly or fully restricted by a RIM/CREP permanent conservation easement by region and year.

	CT	NW	SW	WC	SC	SE	Total
2002	2	0	1	4	0	0	**7**
2003	10	0	2	13	6	0	**31**
2004	5	0	8	12	8	2	**35**
2005	6	4	2	10	6	1	**29**
2006	4	0	5	8	1	0	**18**
2007	9	1	2	8	5	1	**26**
2008	5	2	3	11	13	2	**36**
2009	4	1	7	4	9	0	**25**
2010	3	0	8	8	4	1	**24**
2011	6	0	3	5	6	1	**21**
2012	6	1	12	15	14	2	**50**
2013	1	0	3	6	9	1	**20**
Total	**61**	**9**	**56**	**104**	**81**	**11**	**322**

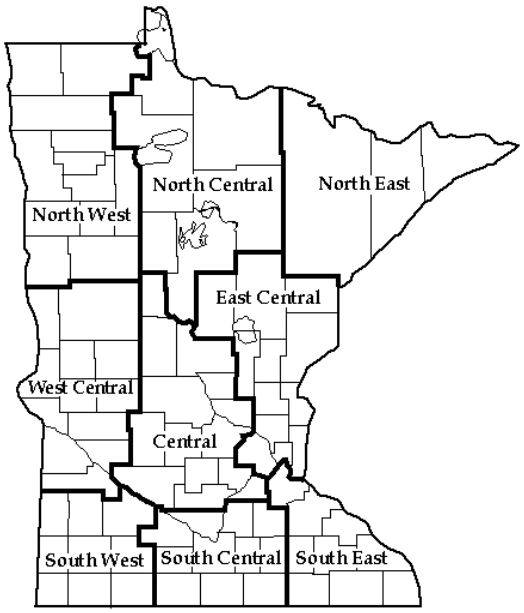


Figure 30. Region boundaries used in study.

Our primary objective is to compare agricultural land sales with PCE restrictions to sales without such restrictions. A standard approach would be to use all sales with no PCE as a comparison group. However, this is an observational study of properties that were actually sold during the study period rather than a random sample of all properties. Consequently, there may be differences between the observable sample and the target population, which may introduce a source of bias. The alternative approach used here, "matching," helps correct for this potential bias.

We used the Match-It software routines in the statistical software package R to obtain a sample of agricultural land sales with no easement to be matched with the eased agricultural land sales, matching on the year of sale, the tax property type code (see Chapter 2 for a discussion of tax property type codes), and the geographic region shown above. So, for example, eased bare-land over-35-acres parcel sales in the South West Region in 2006 were paired with noneased parcel sales from the same region, the same property type, and the same year.

The matching protocol requires complete data for each sale. In our dataset, only 144 of the eased sales were associated with a measured soil productivity score (defined below), so our match dataset is restricted to 288 property sales, 144 eased and 144 not eased. **Table** 11 shows the geographic and temporal distribution of the 288 agricultural land sales used in this analysis.

Table 11. Minnesota agricultural land sales used in model: 144 sales with easements matched with 144 same-year, same-property type, same-region sales that did not have easements.

	CT	NW	SW	WC	SC	SE	Total
2002	0	0	2	2	0	0	**4**
2003	2	0	2	10	6	0	**20**
2004	0	0	10	14	8	2	**34**
2005	2	2	4	6	8	0	**22**
2006	0	0	6	6	2	0	**14**
2007	2	0	4	10	2	2	**20**
2008	2	2	0	12	12	2	**30**
2009	2	0	10	0	10	0	**22**
2010	0	0	14	8	4	2	**28**
2011	2	0	4	8	4	2	**20**
2012	6	0	16	22	14	2	**60**
2013	0	0	6	4	2	2	**14**
Total	**18**	**4**	**78**	**102**	**72**	**14**	**288**

Table 12 contains summary statistics for the nondummy predictor variables to be used in this portion of the study, and Figure 31 shows how these variables compare against each other. The variables are defined as follows:

Price: the time- and terms-adjusted sale price per acre.
Size: the number of acres in the sold parcel.
Year: dummy indicators of year of sale compared to 2002 as the baseline. This variable adjusts for market-wide price trends over time.
Region: dummy indicators of region of the state, compared to Central region as the baseline (see Figure 31). (There were no PCE sales in the largely forested North Central, North East, or East Central regions.)

Tillpct: percent of each sale property that is tillable.
Productivity: average agronomic productivity (scaled 1-100) of each sale property.
Restricted: percent of each PCE sale property that is subject to the easement.

Table 12. Nondummy variables used in the regression model.

	N	Mean	Minimum	Maximum
Price ($/acre)	288	3,589.5	384.9	14,224.3
Size (acres)	288	107.0	5.0	1,200.0
Productivity	288	63.8	1.0	96.0
Tillpct (%)	288	74.4	1.5	100.0
Restricted (%)	144	34.1	0.9	100.0

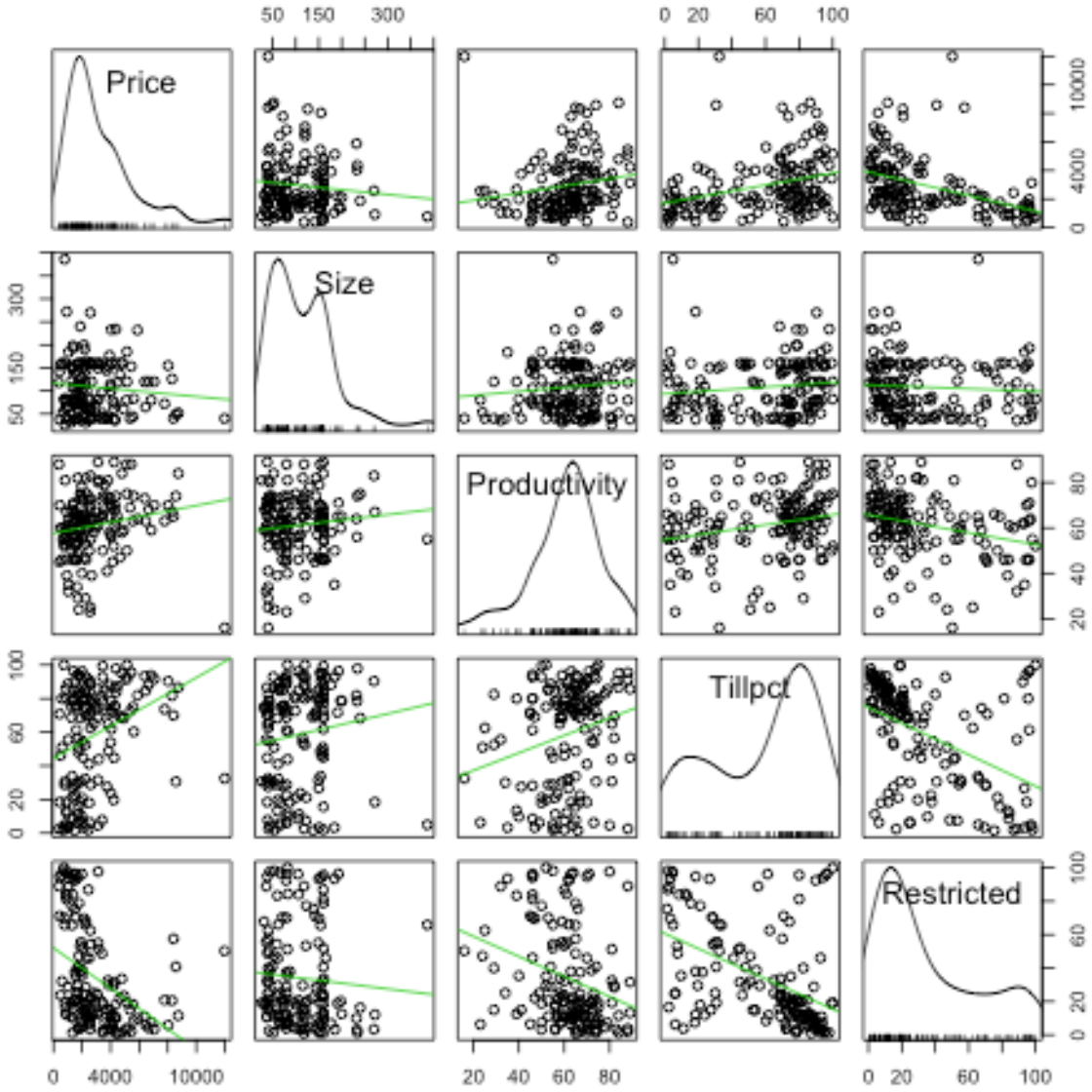


Figure 31. Scatter plot of nondummy variables used in the regression model.

Analysis

Figure 2 shows the distribution of sale prices for the resulting matched sample of 288 properties with and without PCE contracts. The dot in each box represents the median sale price per acre, and the upper and lower ends of the each box indicate the 75% and 25% bounds of the ordered per acre sale prices, respectively. The horizontal lines extending from each box represent the bounds of 95% of the observations. Note the median per acre price of our sample of noneased agricultural land sales is slightly higher than the median price of our sales that are encumbered by a PCE, hinting even at this early stage of the analysis that the market responds differently to easements on a property. The distribution of PCE lands is also more tightly clustered around the median price per acre when compared to the noneased land sale prices.

Figure 33 shows the restricted proportion of each property that is subject to a PCE. (This chart is essentially a detailing of the lower-right-most box in Figure 31.) As this figure illustrates, it is insufficient to speak simply of encumbered and unencumbered properties: agricultural properties encumbered by RIM/CREP easement may still retain a high proportion of unencumbered land. In fact, the highest frequencies in Figure 33 are for sales where only a small portion of the total acreage was encumbered by a PCE. This stands in sharp contrast to the MnDNR easements summarized in Chapter 2, where the entire parcel was eased in the vast majority of cases.

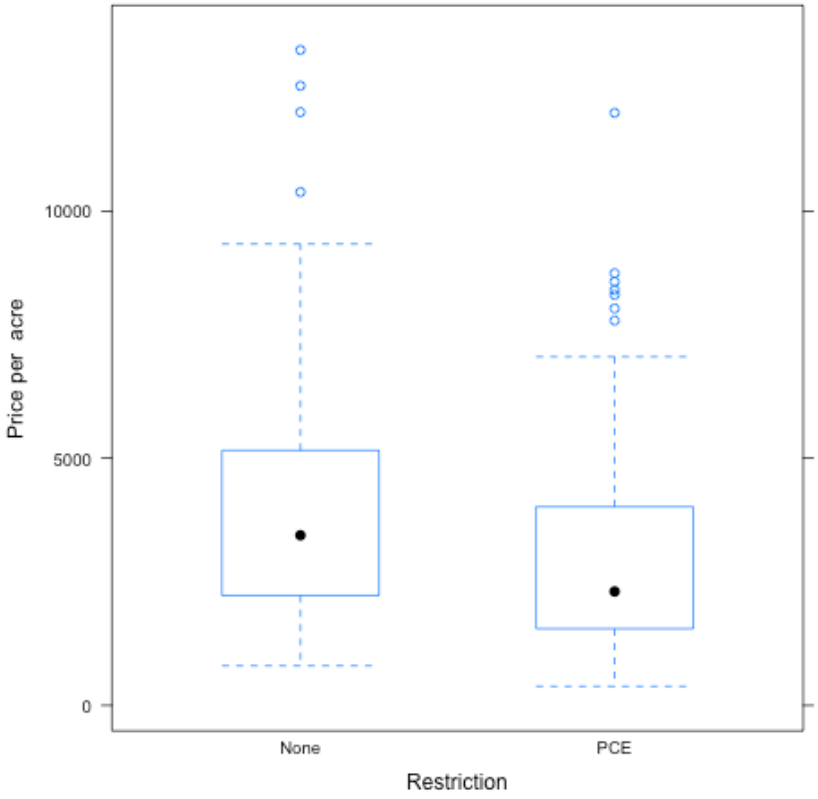


Figure 32. Distribution of per-acre agricultural land sale prices with and without RIM/CREP permanent easements, 2002-2013. N=288.

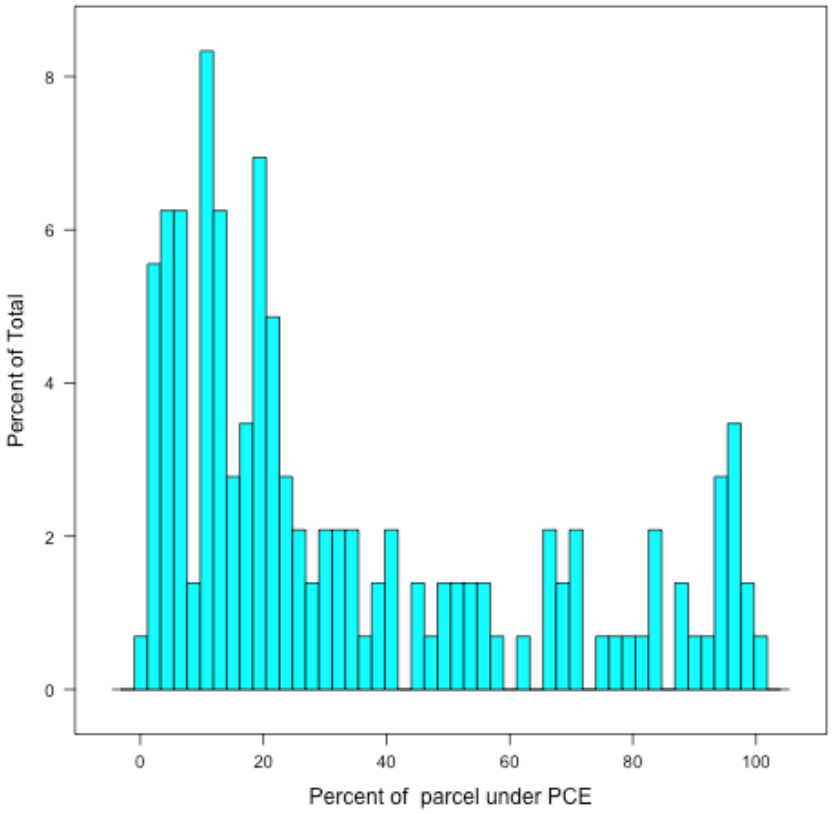


Figure 33. Distribution of the proportion of sold parcels encumbered by a RIM/CREP permanent easement, 2002-2013. N=144.

To estimate with more precision the effect of easements on sales prices, we regressed the log of Price against the principal predictors noted above. We also logged the Size variable. The regression model results are shown in Table 13. Collectively, the variables included in the model account for 61% of the per acre price variability among our agricultural land sales. The per acre sales price of agricultural land in the North West and Central Regions are significantly different from each other; the sale price in all other regions are not significantly different than those in the Central Region. The results show significant per acre sale price differences across all eleven years for which sales data was examined. The sale price per acre is also significantly impacted by the percent of the tract that is tillable and by and soil productivity.

The estimated coefficient on the predictor variable, Restricted, is negative and statistically significant, allowing us to infer with some confidence that easements negatively influence property sales prices. This estimate can be interpreted as the proportional change in the non-transformed (nonlogged) Price variable. Because of the way the data are entered into the model, we can multiply this estimated coefficient by 100 and then by the desired Restricted proportion to obtain the percent reduction in sales price associated with that Restricted proportion, all else equal.

Table 14 summarizes how the percent of the parcel encumbered by a PCE easement (Restricted) affects the sale price of agricultural land, which we might call the “price-effect.” For the table,

the coefficient estimate has been scaled by the mean easement coverage (34%) for our sample of agricultural land sales with a PCE. We also include the 95% confidence interval around the variable estimate (represented by “Lower” and “Upper” in Table 14).

Table 13. Regression model examining the price effect of RIM/CREP permanent easements on Minnesota agricultural land sales using a matched sample. Dependent variable is log(Price). Region coefficient estimates are relative to the Central region; Year coefficients are relative to 2002.

Label	Estimate	Std. Error	t-value	p-value
Constant	6.80504	0.352178	19.323	0.0000
{F}Region[NW]	-0.642438	0.269453	-2.384	0.0178
{F}Region[SW]	-0.0259070	0.137330	-0.189	0.8505
{F}Region[CT]	0.0896328	0.159357	0.562	0.5743
{F}Region[SC]	0.112914	0.135125	0.836	0.4041
{F}Region[WC]	-0.0979044	0.134611	-0.727	0.4677
{F}year[2003]	0.846019	0.241481	3.503	0.0005
{F}year[2004]	0.799602	0.231865	3.449	0.0007
{F}year[2005]	0.862145	0.240261	3.588	0.0004
{F}year[2006]	0.974417	0.248524	3.921	0.0001
{F}year[2007]	1.18855	0.241169	4.928	0.0000
{F}year[2008]	1.28519	0.235792	5.451	0.0000
{F}year[2009]	1.27737	0.239065	5.343	0.0000
{F}year[2010]	1.43020	0.234298	6.104	0.0000
{F}year[2011]	1.64727	0.241137	6.831	0.0000
{F}year[2012]	1.65072	0.227253	7.264	0.0000
{F}year[2013]	1.75181	0.251376	6.969	0.0000
log[Size]	-0.123446	0.0458866	-2.690	0.0076
Tillpct	0.00455665	0.00118411	3.848	0.0001
Restricted	-0.00801739	0.00120685	-6.643	0.0000
Productivity	0.00434665	0.00211713	2.053	0.0410

R Squared:	0.608139
Sigma hat:	0.436264
Number of cases:	288
Degrees of freedom:	267

Summary Analysis of Variance Table

Source	df	SS	MS	F	p-value
Regression	20	78.8645	3.94323	20.72	0.0000
Residual	267	50.8172	0.190327		

The model estimates that for our sample properties, the per acre agricultural land sale price is discounted, on average, 27% when the land is encumbered by a permanent conservation easement. In other words, an easement that covers roughly one-third of the sold parcel can be expect to lower the sales price of the parcel by 27%, compared to a similar parcel that does not have an easement. Applying a 95% confidence interval indicates the average sale price discount for agricultural land with a RIM/CREP easement ranges from 19% to 36%.

Table 14. Summary of estimate RIM/CREP permanent easement price effects on agricultural land sale prices. Values represent the estimated percent discount in sale price per acre for eased parcels below unencumbered agricultural land sale price, based on sample mean.

Lower	Mean	Upper	N	R^2
-35.5	-27.4	-19.2	288	0.61

Figure 34 illustrates the model's estimated price-effect across a gradient of the percent of a parcel encumbered by an easement, truncating the illustration at 60%. The graph illustrates the principal finding from our analysis: sale price per acre decreases as the portion of the parcel subject to a permanent conservation easement increases. (We also examined the interaction of the Restricted variable with, respectively, the Size and Productivity variables. We found that the joint effect of the Productivity variable was positive: the more productive the parcel, the larger is the discount for an eased parcel. For example, the discount was 22% for a parcel with a Productivity score of 10, 26% for a Productivity of 50, and 30% for a Productivity of 90. There was no nontrivial interaction effect noted for the Size variable. Details are available from the authors.)

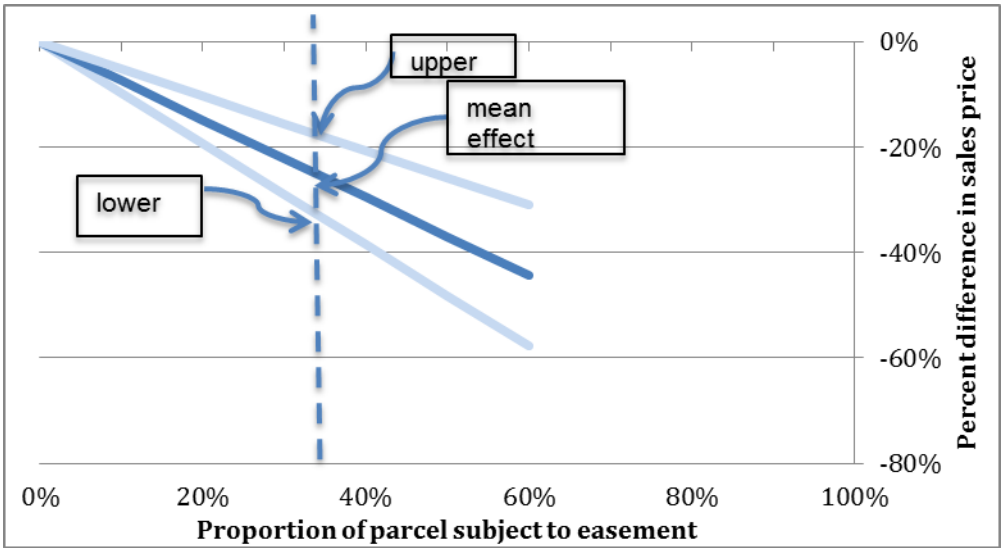


Figure 34. Estimated relationship between the proportion of a parcel subject to a RIM/CREP permanent easement and the sale price per acre discount. The middle line represents the model's estimated mean effect. The upper and lower lines span the 95% confidence range.

Discussion

Linear models such as those used here permit the use of ordinary least squares regression, which has all sorts of convenient mathematical properties. The model we report here does not violate standard OLS regression assumptions about linearity or nonconstant variance, nor does it seem to require more complex structures than those employed here. We examined models that included tax property type code as a variable, as well as transforming (squaring) the Productivity and the Tillpct variables. None of these models had any nontrivial effect on the findings reported above. Consequently, we believe this model's functional form is appropriate for our data.

Ideally, real estate models like that used here would examine the price effect of the variable of interest—PCE contracts in our case—adjusted for characteristics of the buyers and sellers, of the market, and of the property itself. Absent more comprehensive information about buyers and sellers, we cannot adjust for buyer and seller characteristics in any modeling. Market differences are partly accounted for in our model by including using year of sale and location region as adjusters, and by the sample matching process.

We necessarily assume that our interpretation of the data is consistent with that of the person who entered the data. The productivity variable, for example, is the weighted average for the entire property, not just for the cropped portion. If market participants are interested principally in the cropland portion, then this single measure incorrectly summarizes the relevant productivity measure for the sale.

The type and extent of the PCE contract is both the most important information for this study and the most subject to potential data entry errors. For example, information on a PCE is sometimes not readily available to the person filling out the form, even if it was relevant to the transaction itself. Additionally, local tax officials might have missed flagging some sales that did have PCE contracts. There could also be confusion about what type of conservation contracts are actually on the properties examined here. Sales with short-term CRP contracts, for example, might be mistakenly identified as sales with permanent RIM or CREP contracts, or the reverse.

Conclusion

Using 11 years of transactional evidence, the analysis found that lands subject to a RIM/CREP easement are negatively associated with per-acre agricultural land sales price. On average, agricultural land with a PCE contract sold for 19 to 36% less per acre than did similar agricultural parcels without such an encumbrance. Our model estimates that agricultural land fully encumbered by a PCE sells for a substantial discount when compared to unencumbered agricultural land sales.

Due to data limitations, our analysis was able to include just a few of the parcel characteristics that could impact how land market prices reflect permanently encumbered lands. They included the size of the tract, the percent of the parcel that is tillable, and the land's soil productivity. Other parcel and buyer-seller characteristics undoubtedly also influence the price paid for agricultural land subject to a PCE. The inclusion of this additional information—were it available—might produce a more precise estimate of the impact that permanent conservation easements have on agricultural land prices.

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Appendix A. 2013 County assessor rural land valuation schedule data received.

County	Tillable	Woods	Pasture	Waste	Wetlands	Easement
Aitkin	1600	1650	1500	350	350	COMMENT
Anoka	No Data					
Becker	1530-2440	1350	950	350	300-450	175-1220
Beltrami	700-2650	650-3250	735-1850	230-1305	430-1305	COMMENT
Benton	2650	1000	1000	300	300	COMMENT
Big Stone	4169	1000	1000	1000	n/a	1000
Blue Earth	7920	2500	1000	1000	n/a	1000
Brown	7356	2000	1350	500	n/a	1000
Carlton	No Data					
Carver	7000	5700	6800	2000	1850	3500
Cass	1300-2000	1500-2400	1200-2000	450-800	450-800	COMMENT
Chippewa	5007-7005	1000-1300	1200	1000	n/a	800-1393
Chisago	1900-3800	1400-3600	1400-3600	500-600	0-600	COMMENT
Clay	1200-8000	650-1300	650-1300	650-1300	n/a	500
Clearwater	880	1210	505-700	335-670	n/a	600-750
Cook	No Data					
Cottonwood	8051	n/a	700-1400	300	1500	1500
Crow Wing	No Data					
Dakota	No Data					
Dodge	9300	2790	2790	1860	n/a	n/a
Douglas	1800-4000	1400-2100	1400-2100	650	n/a	650 -1700
Faribault	7791	1700	1700	200	250	1700
Fillmore	6700-7200	2200	2400	1800	n/a	1000
Freeborn	7280	910	910	910	n/a	910
Goodhue	No Data					
Grant	3584	1300	1300	650	n/a	650
Hennepin	No Data					
Houston	6500	2000	n/a	2000	n/a	1800
Hubbard	1450-1675	1375-1575	550-1400	550	n/a	1050
Isanti	2700	1800	n/a	500	n/a	1800
Itasca	1900	1900	1900	400	400	COMMENT
Jackson	8357	2035	1437	599	n/a	599
Kanabec	No Data					
Kandiyohi	3134-7394	2100	1600	1000	n/a	1000
Kittson	600-2940	575	575	275-575	275-575	575
Koochiching	700	700	700	175	350	COMMENT
Lac Qui Parle	3656-6077	1000-1250	1000	500-1000	n/a	750

County	Tillable	Woods	Pasture	Waste	Wetlands	Easement
Lake	COMMENT					
Lake of the Woods	525-875	550-875	525	200-425	n/a	525-875
Le Sueur	5500-7250	3700	3200	1600	n/a	1000
Lincoln	5261	300	1000-1500	400	250	900-1400
Lyon	7315	n/a	800-1250	550-1150	500-650	600-1000
Mahnomen	700-3300	800-880	700	300-400	400	525
Marshall	650-4200	600	550	200	n/a	300
Martin	4095-9555	1400	1050	1150	n/a	1200
McLeod	5600	2500	1800	50-1200	n/a	1200
Meeker	4952	2501	1635	797	500	1009-1200
Mille Lacs	1500-2700	1150-2050	1150-2050	400	400	COMMENT
Morrison	1998-3000	1000-2225	1000-1925	500	500	n/a
Mower	10600	2000	1700	1000	n/a	1500
Murray	6788	650	650	300	n/a	650-1000
Nicollet	8100	1500	1500	1000	n/a	1000-4200
Nobles	8256	5070	1393	270	135	400
Norman	2734	700	700	300	500	500
Olmsted	No Data					
Ottertail	1500-3900	1200-1900	1100-1500	500	500	375-1425
Pennington	903-1513	800	800	200	n/a	COMMENT
Pine	1175-1900	1075-1700	1075-1700	300-450	150-225	COMMENT
Pipestone	5358-7536	n/a	1000-3500	600	n/a	600
Polk	2537	900	900	250	900	500
Pope	2500-4600	1800	1600	700	n/a	700-1000
Ramsey	No Data					
Red Lake	1171	900	650	300	n/a	300
Redwood	8379	n/a	900	500	1000	1200
Renville	8962	5000	1000	1000	n/a	1000
Rice	6200	3200	3000	1500	n/a	1500
Rock	9098	n/a	1360-2430	800-1200	n/a	800-1000
Roseau	655-1210	630-680	540	400	400	n/a
Scott	No Data					
Sherburne	3800	3600	3600	500	500	3600
Sibley	7442	3500	1600	1600	n/a	1600
St. Louis	COMMENT					
Stearns	3670	2860	2500	1135	n/a	COMMENT
Steele	6552-8400	2000	2000-4200	1050	n/a	1000-1250
Stevens	4655	800	800	800	n/a	800

County	Tillable	Woods	Pasture	Waste	Wetlands	Easement
Swift	3300-7050	1350	1350	800	n/a	800
Todd	1400-2900	1600-1800	1300-1400	500	500	1300
Traverse	3975-4775	900	900	900	n/a	900
Wabasha	6750	2600	2600	1300	n/a	COMMENT
Wadena	1400-1800	1300	850	350	350	COMMENT
Waseca	9100	1800	1800	1200	n/a	1200-1800
Washington	No Data					
Watonwan	7938	700	700	100	n/a	700
Wilkin	3900	1200	900	600	n/a	600
Winona	5712	2350	2350	2350	n/a	n/a
Wright	4000-6500	2800-4800	2800-4800	1400	100	2800-4800
Yellow Medicine	4558-7486	1200	1300	1000	n/a	800-1400

Appendix B. Countywide average estimated market value per acre for various property tax classifications, 2013. *Source:* Minnesota Land Economics.

County	2a Agricultural	2a Tillable	2b Rural	2b Timber
Aitkin	1326	1022	1212	1351
Anoka	6660	7216	2307	5486
Becker	2532	2650	1312	1461
Beltrami	883	841	1057	1007
Benton	2887	3033	1546	2075
Big Stone	4029	4169	859	n/a
Blue Earth	7820	8080	2080	800
Brown	7039	7498	1613	2000
Carlton	1322	1249	995	1107
Carver	7204	7735	4276	4054
Cass	1343	1410	1807	1758
Chippewa	6026	6388	1156	1145
Chisago	3315	2681	1371	1938
Clay	3485	3765	937	787
Clearwater	861	829	969	1129
Cook	2523	n/a	3106	n/a
Cottonwood	7954	8080	948	161
Crow Wing	2087	1868	1635	1882
Dakota	7689	7700	5453	7315
Dodge	7223	7451	2466	2760
Douglas	3027	2963	2061	1944
Faribault	7466	7730	1077	1699
Fillmore	5383	5966	2038	2211
Freeborn	6793	7325	1477	1370
Goodhue	6117	6649	1692	2152
Grant	3689	3830	1165	1300
Hennepin	18139	18811	15502	22007
Houston	4817	4585	1921	2009
Hubbard	2066	2225	1547	1507
Isanti	2973	2957	1178	n/a
Itasca	1461	1176	1216	1147
Jackson	7921	8357	1432	1842
Kanabec	1921	1572	1154	1291
Kandiyohi	5330	5544	1518	2111
Kittson	1680	1686	512	566
Koochiching	738	691	619	n/a
Lac Qui Parle	4718	5118	1002	1105
Lake	2303	1332	1432	1349
Lake of the Woods	678	652	617	632
LeSeur	6446	6777	4622	3574
Lincoln	4878	5319	675	n/a

County	2a Agricultural	2a Tillable	2b Rural	2b Timber
Lyon	6818	7007	922	n/a
Mahnomen	2017	2163	647	859
Marshall	2109	2141	583	599
Martin	8160	8696	4325	n/a
McLeod	5996	6372	1864	2473
Meeker	4785	4963	1716	2476
Mille Lacs	2102	2311	1034	1182
Morrison	2179	2725	1229	1545
Mower	7440	7704	1764	1997
Murray	7248	7356	576	649
Nicollet	7779	8289	1701	1675
Nobles	8249	8001	1370	1401
Norman	2715	2806	566	700
Olmsted	5652	6005	3294	3958
Ottertail	2272	2418	2007	1604
Pennington	1288	1264	515	797
Pine	1668	1520	943	1219
Pipestone	6090	6563	3921	n/a
Polk	2468	2562	726	885
Pope	3660	3656	1062	1814
Ramsey	63993	62948	n/a	n/a
Red Lake	1231	1220	803	900
Redwood	7868	8375	1042	n/a
Renville	8467	8963	1001	n/a
Rice	5593	5863	2549	3199
Rock	8297	9094	1844	n/a
Roseau	866	882	615	650
Scott	8346	8108	5641	8516
Sherburne	4078	3985	2493	3809
Sibley	7502	7439	1118	3009
St. Louis	1074	919	924	1082
Stearns	3950	3684	2492	2994
Steele	6043	6356	1613	2293
Stevens	4392	4457	798	795
Swift	5012	5162	1122	1409
Todd	1761	1720	1219	1798
Traverse	4355	4332	920	899
Wabasha	5240	5004	2272	2959
Wadena	1548	1597	934	1133
Waseca	6979	6887	1617	1833
Washington	11755	11820	7566	8485
Watonwan	7778	7938	619	700
Wilkin	3844	3892	779	1198
Winona	5451	5709	2267	2368

County	2a Agricultural	2a Tillable	2b Rural	2b Timber
Wright	5657	5681	2777	3915
Yellow Medicine	6153	6625	1008	1197

Appendix C. Minnesota property type code numbers and categories.

Number	Category
1	Residential (less than 4 units)
2	Apartment (4 or more units)
3	Seasonal recreational residential (with buildings)
6	Commercial (with buildings)
7	Industrial (with buildings)
8	Public utility
9	Railroad
10	Mineral
14	Resorts
20	Personal property
21	Residential - bare land
22	Apartment - bare land
23	Seasonal recreational - bare land
26	Commercial - bare land
27	Industrial - bare land
30	Exempt parcels
31	Agricultural class 2a land with buildings (34.5 or more acres)
32	Agricultural class 2a bare land (34.5 or more acres)
33	Rural vacant land class 2b land with buildings (34.5 or more acres)
34	Rural vacant land class 2b bare land (34.5 or more acres)
35	Managed forest land class 2c (34.5 or more acres)
36	Agricultural class 2a land with buildings (less than 34.5 acres)
37	Agricultural class 2a bare land (less than 34.5 acres)
38	Rural vacant land class 2b land with buildings (less than 34.5 acres)
39	Rural vacant land class 2b bare land (less than 34.5 acres)
40	Managed forest land class 2c (less than 34.5 acres)
47	Mixed agricultural class 2a & rural vacant land class 2b land with buildings (34.5 or more acres)
48	Mixed agricultural class 2a & rural vacant land class 2b bare land (34.5 or more acres)
49	Mixed agricultural class 2a & rural vacant land class 2b land with buildings (less than 34.5 acres)
50	Mixed agricultural class 2a & rural vacant land class 2b bare land (less than 34.5 acres)

Appendix D. WFCE township summary easement data.

Township ID	Eased Acres	Total Eased EMV	Eased EMV per Eased Acres/Noneased EMV per Noneased Acres
10006	894	973,800	0.550
10013	718	786,400	1.037
10034	120	146,400	1.110
10091	80	103,500	1.667
10097	670	580,700	1.144
10098	3,061	3,307,100	0.811
40018	720	555,400	0.948
40037	80	60,600	0.760
110015	1,594	2,131,200	0.653
110026	81	117,000	1.184
110086	176	187,300	0.960
310002	5,242	6,254,100	0.871
310004	8,810	10,184,400	0.519
310006	391	367,500	1.132
310007	720	635,500	0.788
310008	124	228,400	1.075
310009	357	348,500	0.432
310010	1,614	1,559,000	0.888
310011	182	168,600	1.007
310012	8,142	6,822,900	0.823
310014	7,621	7,718,800	0.746
310016	721	621,800	1.044
310017	2,821	2,533,600	1.072
310018	703	1,044,100	0.544
310022	9,372	6,966,100	0.487
310024	2,848	2,044,400	0.749
310027	1,400	985,800	1.031
310028	362	374,200	1.381
310029	11,731	10,243,100	0.744
310030	2,738	1,725,300	0.927
310031	39	49,800	1.347
310032	89	83,000	1.134
310033	550	611,000	1.256
310035	26,908	23,507,600	0.860
310038	480	578,700	1.050
310039	1,204	1,479,600	0.800

Township ID	Eased Acres	Total Eased EMV	Eased EMV per Eased Acres/Noneased EMV per Noneased Acres
310040	81	74,600	1.224
310042	4,092	2,715,100	0.877
310063	11,128	9,282,200	0.577
310064	9,985	16,386,900	0.478
310065	7,193	8,415,500	0.659
310066	1,388	1,346,100	1.059
310068	54	94,500	0.851
310070	159	263,300	0.919
310071	4,263	3,627,200	0.848
310072	7,781	7,191,300	0.508
310075	807	820,800	0.744
310076	82	67,900	0.897
310077	277	229,800	0.748
310079	974	840,300	1.660
310080	6,316	5,298,700	0.346
310081	1,317	1,038,300	0.953
310082	2,900	2,437,000	0.985
310083	10,580	8,787,400	0.842
310084	1,042	812,000	0.921
310085	1,746	1,682,900	0.900
310086	427	423,500	1.076
310087	198	155,100	0.843
310092	113	123,500	1.219
310900	1,214	3,051,600	0.755
311000	40	47,700	0.919
311400	80	82,400	1.109
312600	78	92,500	2.000
313500	1,976	1,559,300	1.066
313700	280	196,600	0.823
360095	32,846	17,659,300	0.827
360096	58,776	34,904,600	0.885
360097	21,447	12,165,000	0.854
360098	15,003	8,704,100	0.998
380002	3,083	2,179,700	0.675
380004	315	306,100	0.735
380005	2,479	1,656,300	0.987
660001	89	299,800	1.359
660002	28	88,400	1.468

Township ID	Eased Acres	Total Eased EMV	Eased EMV per Eased Acres/Noneased EMV per Noneased Acres
660006	764	2,880,100	0.815
660008	171	593,800	0.932
660014	166	759,700	0.902
690006	158	105,400	1.189
690021	440	349,400	0.422
690028	579	489,200	0.894
690035	80	52,700	1.143
690040	290	258,500	0.640
690041	4,151	3,343,200	1.100
690060	280	217,500	0.985
690067	120	84,600	1.148
690071	1,547	1,427,500	1.351
690086	5,488	4,714,400	1.156
690094	118	91,200	1.161
693800	13,643	8,317,400	0.981
697200	520	343,000	1.067
697300	40	27,800	1.109
790004	1,879	5,169,300	0.799
790012	30	61,100	0.875
790015	122	306,800	0.707

Appendix E. RIM/CREP township summary easement data.

Township ID	Eased Acres	Total Eased EMV	Eased EMV per Eased Acres/Noneased EMV per Noneased Acres
30007	68	35,100	0.647
30017	182	282,800	0.561
30023	497	813,300	0.655
30035	215	119,100	0.361
60001	33	75,800	0.654
60012	80	78,400	0.298
70005	156	445,700	0.391
70014	44	273,100	1.048
70022	160	797,600	0.771
71300	20	111,200	0.834
100005	136	831,300	0.857
100007	156	856,200	0.919
100010	26	275,900	1.089
120004	41	74,000	0.379
130009	20	60,000	0.821
140003	429	252,000	0.189
140012	160	77,000	0.291
140013	332	165,000	0.186
140014	244	119,700	0.152
140016	719	772,900	0.589
140025	322	479,900	0.570
140026	360	175,800	0.243
140027	641	1,001,700	0.613
140028	98	249,200	1.224
140029	803	415,600	0.191
200005	44	270,400	0.850
210001	105	148,900	0.549
210003	70	121,100	0.608
210012	67	117,900	0.787
210016	37	104,300	0.957
210020	75	104,600	0.463
230008	97	363,600	0.890
230009	167	637,800	0.842
230010	43	147,600	0.697
230018	108	448,300	0.901
230022	164	679,700	0.819

Township ID	Eased Acres	Total Eased EMV	Eased EMV per Eased Acres/Noneased EMV per Noneased Acres
240004	31	51,400	0.262
240007	80	69,600	0.153
240015	760	2,636,500	0.524
240016	80	271,200	0.563
240018	267	509,100	0.296
280005	119	181,800	0.818
280008	24	11,000	0.215
280009	41	79,400	0.585
280011	23	66,700	0.967
280016	252	511,500	0.660
320006	159	1,317,900	1.018
320009	155	305,900	0.259
320019	5	28,400	0.862
410009	162	585,500	0.756
410011	240	653,400	0.629
430001	299	1,585,800	1.100
430002	65	319,000	1.023
430004	425	1,620,200	0.670
430006	103	436,700	0.864
430008	46	55,100	1.168
430009	118	428,500	0.603
430011	61	87,100	1.223
430014	82	390,200	0.823
520010	146	879,600	0.913
560006	371	1,163,900	0.975
560018	220	520,400	1.254
610002	218	256,500	0.442
610005	335	595,200	0.784
610015	159	407,800	0.732
610019	340	1,163,800	0.955
611100	20	54,800	1.860
640002	249	1,486,500	0.916
640003	183	1,154,500	1.040
640004	615	4,708,100	1.148
640005	233	1,728,000	0.937
640006	202	234,600	0.472
640007	160	1,242,200	1.042

Township ID	Eased Acres	Total Eased EMV	Eased EMV per Eased Acres/Noneased EMV per Noneased Acres
640009	338	1,836,200	0.838
640010	80	608,500	0.830
640013	527	3,018,300	0.698
640014	315	2,139,200	0.854
640015	640	4,825,900	1.007
640016	483	721,000	0.228
640017	489	4,038,700	0.998
640018	349	2,693,200	0.957
640019	752	1,172,000	0.281
640020	417	3,632,600	0.979
640022	225	1,947,900	1.017
640023	80	488,300	0.882
640024	240	1,785,000	0.889
640025	240	1,708,900	0.879
640026	420	2,534,900	0.738
650001	559	4,662,000	0.924
650002	344	1,243,000	0.556
650003	240	1,818,600	1.031
650007	297	2,523,600	0.953
650009	129	991,600	0.893
650010	40	330,100	1.012
650011	160	1,103,900	0.903
650012	146	721,400	0.638
650014	303	2,354,400	0.870
650016	80	580,700	0.836
650017	771	6,380,700	0.912
650018	239	2,168,300	0.973
650019	280	2,366,000	0.929
650020	96	765,900	0.953
650021	531	4,839,800	1.021
650022	102	101,700	0.119
650023	49	142,700	0.409
660008	108	345,200	0.845
660013	68	205,800	0.764
700001	202	1,174,500	0.912
740003	40	199,800	0.914
740010	1,181	6,391,100	0.843

Township ID	Eased Acres	Total Eased EMV	Eased EMV per Eased Acres/Noneased EMV per Noneased Acres
740013	215	484,600	0.427
760003	160	597,700	1.205
760016	151	688,900	1.111
770010	223	424,200	0.864
790012	146	318,800	0.597
810001	77	438,000	0.833
810008	231	855,000	0.728
810012	105	162,200	0.243
850004	320	1,030,000	0.797
850008	277	783,700	0.883
850009	106	348,300	0.917
850012	29	104,700	0.933
850016	120	310,300	1.100
850018	111	374,000	0.906
850020	476	1,556,400	0.997
850400	98	302,500	0.966
870009	402	554,200	0.237
870016	56	56,300	0.691
870017	397	571,600	0.336